

THE
CALCUTTA JOURNAL
OF
MEDICINE:

MONTHLY RECORD OF THE MEDICAL AND AUXILIARY SCIENCES.

तदेव युक्तं भैषज्यं यदारोग्याय कल्पते ।
सचैव भिषजां श्रेष्ठो रोगेभ्यो यः प्रमोचयेत् ।
चरकसंहिता ।

That alone is the right medicine which can remove disease :
He alone is the true physician who can restore health.

Charaka Samhitā.

EDITED BY
AMRITA LAL SIRCAR, L.M.S., F.C.S.

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January, 1914.

[No. 1.

THE ACUTE ABDOMEN.

By JAMES EADIE, M.B., Ch.B.Glas., F.R.C.S., Eng.

Assistant Surgeon to the London Homoeopathic Hospital.

It may perhaps be thought by some that the subject of my lecture is already rather a hackneyed one, that the matter has been so often and so plainly discussed, that little or nothing new or helpful remains to be said, and that hardly any further lessons remain to be learnt.

If happily that were so, we should, I am sure, hear less of the matter. It is in medicine as in finance—much poverty and much paper may co-exist. It is not the settled problems of medicine about which much is written, it is rather concerning those matters of which many things still need to be made clear.

The sudden onset of acute intolerable pain and the development of intense muscular rigidity in the whole belly-wall—these two signs and these alone enable one to say that a serious lesion has occurred in the abdomen which for its most certain relief will need the intervention of the surgeon.

A rapid pulse is never present, so far as we know, within the first two or three hours; in the very early cases I have seen of perforation of any viscus the pulse at first was under 60. The alteration in its character and rapidity are, however, not

long delayed, and a steadily augmenting rate, the pulse adding a few beats more hour by hour, is most significant.

Nausea; vomiting, and diarrhoea may all be present, but hardly add anything of value to the other features of the disease.

A strained and alert anxiety is noticed in the expression, and the breathing is rapid and shallow, and of the thoracic type. The diaphragm is as loth to move as the other muscles with which it forms a wall around the peritoneal cavity. It is, however, never held at first in as firm a contraction in cases of perforative appendicitis as in cases of rupture of the stomach or duodenum, or gall-bladder—lesions which are of course in closest proximity to it. This is another example of the fact that muscular rigidity, though universal, is most strongly developed in those parts which are most in need of rest and protection.

The most formidable and the most frequent of all the acute emergencies in abdominal disease is concerned with the vermiform appendix. An acute attack of inflammation in that organ, attended by gangrene or followed by perforation, is still the most common cause of a catastrophe, placing the life of the patient in instant jeopardy, and needing for its certain and most speedy relief the immediate intervention of the surgeon.

Moy nichan believes firmly, at least states he does, that the serious characters and the terrible fatality of this disease are due very largely, if not exclusively, to the measures which are, with the best intentions but with profoundest unwisdom, directed to the relief of those earliest manifestations of the disease, the full significance of which is hardly yet appreciated.

Harvey Cushing has shown that starvation will render sterile all those parts of the intestine which can be caused to empty. On the other hand, it is also well proven that the administration of any aperient medicine not only excites a greater tumult of activity in the small and large intestines, but that secretion is more profuse and the bacterial virulence throughout the canal is considerably augmented.

The first symptom in an attack of acute appendicitis is pain. It is always pain and never sickness or vomiting, nor malaise, nor any other symptom whatever.

If pain should not be the inaugural symptom in a case of acute abdominal illness, the possibility of the appendix being at fault may be definitely excluded.

The pain is absolutely abrupt in onset, it is of varying degree of severity—is often, indeed, usually at first referred to the epigastrium, but after the lapse of a few hours becomes as a rule distinctly worse in the right iliac fossa. The pain may be rapidly followed by a rigor or a sharp elevation in temperature, by vomiting, and frequently by diarrhoea. A slight elevation of temperature occurs without exception in cases of appendicitis in the early stages.

The symptoms one and all show a tendency to steady abatement if proper treatment is adopted, if the patient is denied food of all kinds, fluid or solid, and if aperients are strictly and sternly withheld.

It seems to be the natural and instinctive desire of the mother, wife, or nurse in such a condition to administer forthwith a brisk purgative. It is held that something has “disagreed” with the patient and the offending substance is to be sharply expelled. Castor oil is the usual remedy and it is administered unsparingly.

It is no uncommon thing to be told that because the first dose was vomited (a most proper act of rebellion on the part of the stomach) a second, or it may be a third, has been given.

A few hours after the aperient is swallowed, frequently in the early hours of the morning, the patient is seized suddenly with a new and more intolerable agony, vomiting occurs and diarrhoea may be repeated. The abdominal wall becomes rigid, tenderness spreads rapidly across the lower part of the belly, and at last is everywhere present; the pulse rises steadily, and all the signs and symptoms of an acute peritonitis are ushered in without delay.

When an operation is performed a gangrenous appendix, very probably adherent near its attachment to the cæcum, is found, and the peritoneum, already extensively and severely attacked by an acute inflammatory process, replies to the insult by pouring out freely a thin, clear, sterile and actively bactericidal fluid.

A distinguished abdominal surgeon not long ago stated that it was now about seven years since he was first brought firmly to the conviction that in cases of appendicitis it is the administration of an aperient that is responsible for the acute catastrophe of gangrene and perforation which ends in an acute peritonitis. He did not remember one single case on which he had operated since in which it was not perfectly clear that the same sequence of events—pain, aperient, perforation—had occurred, and he therefore went so far as to say that in almost every instance of acute peritonitis, due to the perforation of an appendix, it is the treatment directed to the relief of the condition that is the cause of the serious and so often fatal catastrophe.

In cases of appendicitis, however acute their origin may be, perforation followed by an acute general peritonitis does not seem to occur if no aperient is given, and if absolute starvation is adopted from the first. The acute spreading or general peritonitis which occurs in this disease is attributable to treatment; it is a "therapeutic peritonitis."

He was quite prepared to learn that this emphatic statement is received with a shrug of doubt and the tolerant smile of disbelief, but if strict inquiry is made into the intimate details of the history of the cases he could not think that his experience of this disease would prove to be singular. In appendicitis perforation spells purgation. In all cases of abdominal pain avoid aperients.

Personally I am coming to the conclusion that in spite of the undoubted advantages which may in many cases accrue from the starvation plan of treatment, along with the appropriate remedies in acute appendicitis, early or instant operation is always desirable.

The aforesaid authority further states that if the surgeon, when he is called in consultation, hears that a purgative has been given, that alone should decide him to advise an immediate operation. In children especially there must be no exceptions to this law. An acute attack in a child should always be treated surgically, for the usual signs and symptoms present in an adult are conspicuously lacking here. Most surgeons have been summoned to see a child whom he finds fast asleep. On examining the abdomen it is flaccid and soft though tender; and this in spite of the fact that at operation a gangrenous appendix and a widespread peritonitis are revealed.

The catastrophe which in point of frequency comes next to appendicitis is concerned with the perforation of an ulcer of the stomach or of the duodenum. The frequency with which these ulcers are present in all periods of life has hitherto been considerably underestimated. It is by degrees becoming more generally recognized that chronic ulcers of the stomach, and of the duodenum—it is those which perforate in the great majority of cases—are conditions that can be diagnosed with an approximation to accuracy, which, though it leaves much to be desired in the case of the former, is more exact in the case of the latter.

Whenever a patient who has complained at intervals of indigestion begins to suffer in the present attack more acutely than in an earlier one, the signal of impending perforation is, according to Moynihan, being raised, and the clear warning should by no means go unheeded.

At the moment when perforation occurs there is the most agonizing and unendurable pain. Patients will afterwards say that there is no pain so horrible in its torture as this. The least movement seems to add something to its severity, so that a patient will perhaps remain for hours almost without stirring. A medical man stated that the perforation occurred in his own case while he was crouched on his hands and knees in bed in a position which seemed to relieve his pain. When the rupture of the ulcer took place he could not move to reach the bell, and

had to wait motionless until help came to him in the early morning.

The tense rigidity of the whole body is in striking contrast to the ceaseless unrest of a patient who is suffering the agony of hepatic colic. In him a constant change of position and of pressure seems to cause abatement of the pain, or at least to be imposed upon the patient in search of relief that never comes. The abdominal muscles are found to be in a condition of inflexible rigidity, but even here some difference in the various parts of the abdomen can often be felt. Over the ulcer the stiffness is of the most obdurate character: "One might almost think that a disc of metal replaced the supple muscle." This local increase of a general resistance affords a decided help not only in the diagnosis of the lesion, but in its location. The patient's expression is of one who is terror-struck. The approach of a hand to the abdomen for examination is quickly resented, and the most piteous appeal for gentleness is made. The breathing is short, jerky, and shallow, and the patient may indeed cry out that he "cannot breathe." This is due in part no doubt, to a spasm of the diaphragm, and in part also, no doubt, to that great over-distension of the stomach which is so commonly seen when the abdomen is opened.

Though the patient looks generally ill—with pallid face, staring eyes, and sweating brow—the pulse will be found at the first to be hardly altered in frequency or in volume. This is one of the surprises which must not fail to be recognized and remembered. The pulse increases in frequency, and depreciates in value very soon, but this is due not to the perforation but to the peritoneal contamination which is the inevitable sequel.

No one has any difficulty in recognizing the presence of peritonitis, but our aim must always be to discover at the moment of its occurrence the lesion to which the peritoneal infection is secondary. The symptoms and the signs of the perforation of a hollow viscus are not those of the peritonitis, which make haste to develop.

Among the catastrophes to which attention has been especially directed within recent years, the most remarkable, from many points of view, is that which involves the pancreas in an acute inflammation. For some time after the remarkable paper by Dr. Fitz in 1889 the condition of "acute hæmorrhagic pancreatitis" was believed to be of great rarity; but, as in so many other cases, the recent investigations of the surgeon have shown that infrequency of occurrence meant inadequacy of observation.

The onset of pain in acute pancreatitis is usually sudden; a moment before the patient may have been going about in comfort, conducting the ordinary affairs of the day. The absolutely instantaneous onset of the very severe pain is constant, but some of the patients will say that they have been conscious for a few hours, or it may be for a few days, of a sense of discomfort or milder pain in the upper part of the abdomen.

About one third of the total number of observed cases have occurred in patients who were the subject of recurring flatulent dyspepsia. The patients are generally stout; women are affected slightly more than men, and pregnancy would seem to be a factor of some importance in the causation. The intense pain, then, is sudden in onset, is confined within the abdomen to the upper portion, but passes almost always through to the back; it is agonizing beyond endurance, and is not seldom the cause of fainting or a profound collapse. The face is drawn and white, though the lips are often blue.

In many of the cases there has been a curious leaden colour of the whole face, a slight but unmistakable and characteristic cyanosis. The whole appearance and attitude of the patient suggest that death may be imminent, for the extremities are cold, the heart usually beats with great rapidity, and the quality of the pulse is poor. Vomiting is an early symptom, is frequently repeated, and may last for days or weeks if the patient should survive so long. The food that has been taken is the first to be rejected; afterwards all the vomited matters are deeply stained with bile, and pure bile, to all appearance, may be

brought up in large quantities. This has suggested in several cases a diagnosis of high obstruction in the jejunum.

The patient, as will be grasped from this description, presents the aspect and the symptoms of profound poisoning, and it appears probable that the toxic substances are produced as a result of the digestion of the pancreas by its own escaped secretions.

The abdomen when examined early presents the most indomitable rigidity and some fullness in the upper part; the remaining parts may be quite soft and flaccid, yielding readily to the hand, or they may be held with some degree of firmness. The upper portion of the abdomen, the epigastric region especially, never ceases to offer the most incoercible resistance, and, however gentle the examination may be, it is grievously resented and is repelled at the earliest occasion.

When the records of published cases of acute pancreatitis are studied, it is seen that the number that have been correctly diagnosed before the operation is extremely small. So far as my own experience goes the only other abdominal emergency in which there occurs a profound collapse, with instant lowering of the blood-pressure and a general depression of the circulation, is dependent on the rupture of a tubal gestation.

The history in cases of ruptured tubal pregnancy is characteristic. The patient is generally between the ages of 20 and 40 and one menstrual period has been missed. About two or three weeks after the time at which the period should have occurred (sometimes, though rarely, even later than this) there is a slight vaginal discharge of blood, and almost at the same time an attack of severe abdominal pain, followed very speedily by pallor, faintness, collapse, air-hunger, sighing, restlessness and all the symptoms of great loss of blood. The pain is acute but does not even remotely approach in intensity that which is present in the conditions I have already described. The patients indeed frequently say that they "feel as if something had given way," or as if "something had burst" within the body. The abdomen becomes full, especially in the lower half, where a

feeling of tumidity, of "doughiness" is often present; and occasionally one side is more tender than the other. Resistance to the examining hand is not present. The muscles, it is true, may be in some degree tightened, by reason of the sudden increase in the contents of the abdomen, but the stubborn and unchanging muscular rigidity of the other catastrophes is never present in this. In some cases there is, as it were, a miniature attack of this kind, before the formidable and final seizure has come; such are due, no doubt, to little leakings from a tiny rent, whose edges are presently torn asunder to give vent to the profuse bleeding which is taking place.

The crises that develop in the course of cholelithiasis are exceedingly few. The attacks of hepatic colic, especially those which are due to the temporary impaction of a calculus in the cystic duct, are terrific in severity, but they are not lethal. The agony is almost unendurable while it lasts, and the very extremity of endurance is reached, but the danger to life is quite inconsiderable. The acute cholecystitis which results will almost without exception subside in the course of a few days, so that a deliberate operation can then be undertaken with every circumstance of care.

That which chiefly distinguishes a patient suffering the torture of colic, whether hepatic, renal or intestinal, from one in whom the perforation of a hollow viscus has occurred, is his ceaseless agitation and unrest. The former patient tosses and throws himself about, writhes on the floor or the bed, doubles and twists himself in the constant effort to get ease; the latter at the moment of the catastrophe seems to be struck motionless, and for hours may be hardly able to breathe or stir.

However acute the torment of hepatic colic there does not seem to be any rigidity of the abdomen except in the immediate region of the gall-bladder. All other parts are supple and free from any tenderness. A rigor, or a brief shudder, with only a trivial increase of temperature, is seen not infrequently in cases of incipient cholecystitis. When perforation takes place the temperature always falls.

The conclusions we are entitled to draw are, I think as follows:

(1) The occurrence of a sudden attack of intolerable agony in the abdomen, associated with tense rigidity of all the abdominal muscles, indicates, that there is an acute lesion which needs immediate surgical attention. These two signs, and these alone, are an urgent warrant and compulsion to us to treat the case at once by operation.

(2) A differential diagnosis is frequently possible if strict attention be paid to the details of the anamnesis, and if the firm abdominal wall be searched for a tender area of supreme resistance.

(3) Shock is not a symptom of perforation, for in the early hours after this disaster has occurred, the pulse is very little altered in volume or in rate.

(4) In all cases of abdominal pain, especially in children, the use of aperients should be avoided.

I should like to emphasize very strongly that no case of abdominal pain can be considered trivial when first seen; that every such case should be seen a second time within a reasonably short period; and further, that no form of opium should ever be given until the patient has been sufficiently watched to enable a serious lesion to be excluded, or until operation has been decided upon. I venture to suggest that when a practitioner has definitely made up his mind that abdominal pain is due to an organ within the abdominal cavity—*i.e.*, one into relation with which the peritoneum comes, and not a referred pain—his reflections will be greatly aided by keeping three points in mind:—

(a) Acute obstruction, intussusception, volvulus strangulation.

(b) Peritoneal shock, from a perforation or rupture of a hollow viscus or some pathological tumour.

(c) Peritoneal infections.

It may be said that I have omitted an enormous amount; I admit it. I wish to concentrate attention on the lesions as they present themselves for treatment.

We are called, then, to a case presenting either abdominal pain or vomiting, or both; or to a febrile case in which attention is

directed to the abdomen. We have excluded thoracic inflammations, gastric crises, typhoid, &c., and have to face the serious question—Is this a case requiring surgical interference? Following closely on this—Is this the right time for anything to be done, or am I justified in waiting? And bear in mind that by waiting there may be a rapid transition from a condition fairly easily dealt with by a fairly simple procedure to one of the gravest states coming under the care of a surgeon.

Cases of sudden acute abdominal pain group themselves into three classes:—

(1) Those in which the occurrence of an abdominal catastrophe is at once apparent, and in which there is no doubt as to the organ involved.

(2) Those in which the abdominal catastrophe is obvious, but considerable doubt exists as to which is the organ involved.

(3) Those in which it is impossible to say off-hand that any catastrophe has taken place. It is in this class that time (often a matter of a few hours only), which demonstrates the persistence, aggravation or disappearance of initial symptoms, and frequently the development of new symptoms, is of the greatest service. Time is in fact a consultant of considerable reliability.

What is to be done by the medical man when called to a patient who has been seized with sudden acute abdominal pain?

(1) Give no morphia except for agonizing pain.

(2) Give nothing by mouth. The stomach and intestines need rest, not repeated irritation by food or drugs, the immediate absorption of which is most doubtful, and which if the lesion proves to be the perforation of a viscus, such as the stomach, by passing into the peritoneal cavity greatly increase the gravity of the case.

(3) Employ at once and maintain throughout the Fowler position. By so doing the chances of the patient will be enhanced and the difficulties of the surgeon diminished. Since the diaphragmatic area of the abdomen is of high vulnerability compared to the lower abdomen, it is of the greatest importance to endeavour to guide escaped contents and effused fluids down-

wards. It is a very different thing for a surgeon to have a pelvis to clean out, to what it is for him to have to clean out the sub-diaphragmatic region.

ACUTE APPENDICITIS.

The only safe rule of treatment in acute appendicitis is that operation should follow immediately upon diagnosis. The limitation of this rule will be subsequently discussed.

The patient with acute appendicitis should not be moved without good reason, nor otherwise than upon an ambulance.

The arguments against the present widespread practice of deferring operation until it becomes imperative are:—

(1) The favourable moment for operation has passed. The inflammation is no longer an endo-appendicitis confined to the interior of the appendix, but involves a larger or smaller district of the peritoneal cavity.

(2) Dangerous or fatal complications, which can usually be avoided by operating at the earliest possible moment, may supervene within a few hours of the onset of an acute attack. In such cases chronic latent disease of the appendix has usually been present.

(3) It is not possible to distinguish cases which will run a favourable course under medical treatment from cases in which dangerous or fatal complications will occur. In appendicitis there is no constant correlation between the general symptoms and the local condition.

(4) Acute appendicitis does not always recover, even when its course appears favourable. Pyrexia may persist for months, usually terminating in pyæmia or septicæmia.

In favour of operation instantly upon diagnosis the principal reasons are:—

(1) The risk of appendectomy within the first forty-eight hours of the attack is smaller than is the double risk of an attack and of a subsequent interval operation.

(2) The early operation before bacterial invasion of the peritoneum has occurred is often an aseptic operation from first

to last. Drainage is often unnecessary. It is frequently possible to employ a valvular incision, such as Battle's, which precludes the possibility of a subsequent ventral hernia.

(3) The patient is subjected to one illness and one risk instead of being presented with a choice between (a) two illnesses: (1) primary attack, (2) interval operation, each with a definite mortality risk; (b) one illness, and the subsequent dread or actual occurrence of a second attack, which may prove fatal.

(4) In cases operated upon within the first forty-eight hours post-operative complications are very rare.

Broadly speaking there are three schools of practice in the treatment of appendicitis which may for convenience be spoken of as the medical, medico-chirurgical and surgical.

Those who hold that under all circumstances non-operative treatment is best are few in number. Let me recall that Professor Osler has stated in set terms: There is no medical treatment for appendicitis. Doubtless complete rest, starvation and rectal salines will minimize the percentage of fatalities in a series of cases treated non-surgically, but in any case the deaths will be numerous.

At first sight all arguments seem in favour of treating ordinary cases of appendicitis medically, reserving surgery for the severer forms, or for those in which unfavourable symptoms develop. This course seems to be the rational compromise so beloved to the English mind. To use an Americanism, medicine gives surgery "the dog to hold" just when the animal is getting completely out of hand.

Before the medico-chirurgical school of practice can establish its position it must prove its ability to answer the following questions when faced by a case of appendicitis on the first day of the disease:—

(1) Are you certain that the appendix is not gangrenous?

(2) Are you certain that the appendix is not distended by pus almost to the point of rupture?

(3) Are you certain that the appendix is not in a position where rupture will entail the probability of a fatal result?

As a matter of fact none of these questions can be answered in the affirmative, even by the most expert clinician. If then it can be proved that operation in the early stage of acute appendicitis is a safe procedure, the position of the medico-chirurgical school becomes indefensible. The waiting policy is one of trusting to luck in the knowledge that the chances of the patient's death are only one in ten. The postponement of operation gravely augments the risks, should an operation become imperative at a later date.

The surgery of appendicitis should not be judged, as at present, by its measure of success in dealing with the failure of medical treatment.—*The British Homœopathic Journal*, October, 1913.

EDITOR'S NOTES.

Baking Powder.

Professor E. F. Ladd, Commissioner of Food and Drugs for the State of North Dakota, has recently made a number of observations regarding baking powder, with the object of fixing the standards of purity, quality, and strength. It is directed that the label shall show the net weight and be free from advertising or descriptive matter. Baking powders containing 1 part per 1,000,000 of arsenic or more than 5 parts per 1,000,000 of lead are illegal, as well as those containing harmful or deleterious ingredients. Misleading or deceptive newspaper or other form of advertising is prohibited. When the essential constituent is a compound of aluminium, the baking powder must be labelled "alum" baking powder, and the presence of acid phosphates must be indicated by the use of the term "calcium acid phosphate." It recommended that the ingredients be named as follows: "This baking powder contains the following ingredients and none other: sodium bicarbonate, calcium acid phosphate, alum, and starch." A standard baking powder is considered to contain not less than 12 per cent. of available carbon dioxides. The sale of baking powder containing added albumin is prohibited. It is of interest to note that the use of egg albumin in baking powders has increased during the past few years. When asked why it was used some of the manufactures frankly stated that the presence of albumin produced foam for use in demonstrating the qualities of the powder to the consumers at county and other fairs. Such a test is misleading and completely deceives the customer, who is thereby deluded into believing that the particular baking powder under test is greatly superior to others in its raising qualities. One manufacturer stated that the presence of albumin retarded the escape of carbon dioxide, and another claimed that the albumin increased the leavening power in the sense that it provided an additional amount of gas available for the leavening action. Professor Ladd believes that the test really shows nothing as to the real merits of two baking powders, as a baking powder free from albumin might seem to be the poorest in the lot, and yet it might yield the most carbon dioxide, uniformly given off.—*The Lancet*, October 18, 1913.

Malaria and Agriculture.

In this age of experimental science there is a tendency for the knowledge derived from mere observation to be overlooked or even discarded. Observation for years has associated certain conditions with certain diseases, and causation theories, often vague and indefinite enough, have been founded thereon. Then comes some new light on the subject of the causation of the disease which is clearly established by experimental investigation, and because the theories formerly based upon the observation of the past are thus proved to be entirely fallacious the tendency is to ignore or discard the observations themselves. And yet these observations when approached from an entirely different point of view may sometimes not only be shown to be absolutely correct, but may even indicate ways in which the later experimentally proved knowledge may be widely extended in its application. An interesting example of this was afforded by the investigations into the relations between malaria and agriculture of Dr. Malcolm Watson, of the Federated Malay States, detailed recently by him before the Royal Colonial Institute in a paper on the Prevention of Malaria: its Relationship to Agriculture. Malaria has for ages been known to be connected with swamps and to be reduced by drainage and cultivation. Again, in some places flooding a swamp actually improved health, while in others drainage and turning up the soil induced serious outbreaks of disease; yet in some regions it was found, not in the swamps, but in the hills and dry sandy deserts. Dr. Watson, following up the line of investigation begun in the Malay States, made a personal inspection of the malarial districts in North Sumatra, Panama, British Guiana, and Barbados. The upshot of his observations is, in brief, the working rule that pool-breeding mosquitoes can be abolished by open drainage, while stream-breeding mosquitoes, some of which are also malarial carriers, necessitate subdrainage for their destruction. The principal hill mosquito is *Anopheles maculatus*, and it was found that wherever it was present hill malaria existed, but not where it was absent. The observation, therefore, that cultivation of low-lying swampy lands diminished malaria, but did not necessarily do so in the high-lying districts where it existed, was thus both proved and explained. By putting the streams underground for a certain distance round the habitations in the hill districts the malaria was subdued.—*The Lancet*, December 6, 1913.

Present Day Dangers.

In his address before the Congress on School Hygiene at Buffalo, Dr. Charles W. Eliot, president emeritus of Harvard, calls attention to the detrimental effect on health of the progressive civilization of the last hundred years. Evidence of this is seen in the lowered vitality of city dwellers, in the diminishing size of families, in the increasing incapacity of many women to bear and nurse children and in the increase of the insane, the defective and the criminal. That civilization is preparing its own destruction is shown by the conditions existing in the great centers of population, where defect, disease and crime are seen in their most alarming and destructive form. The question of good breeding and the means by which it may be obtained is not easy of solution. Society must become more enlightened if the means of protecting civilization against its inherent tendencies toward decay and dissolution are to be developed. We must strengthen by every possible means the social consciousness toward putting into execution all available means of defence which ethics and the science and the science of medicine recommend. Not much can be done with those who have reached adult life under present conditions. Hope lies with the children, and herein is the importance of a training which will render possible a saner and more wholesome hygiene both of body and mind.—*Medical Times*, November, 1913.

Old English Herbals.

In the mind of the average reader the word "herbal" generally calls up a vision of a magnificent folio full of illustrations. Such, for instance, are "The Great Herbal," the "herbals" of Lobel, Turner, Lyte, Gerard, and Parkinson. This last-mentioned book was more accurately speaking a treatise on gardening than a herbal proper, although its subtitle is "An Herball of Large Extent." Its main title was "Paradisi in Sole Paradisus Terrestris," wherein the author's name was ingeniously concealed, for Parkinson (the spelling with "u" or "o" is of no moment) is, in Latin, "Paradisus in Sole." "The Great Herbal" appeared in 1526, but in the previous year—namely, 1525—there had appeared "Banckes'

'Herbal,' which, says Mr. H. M. Barlow in an interesting paper now before us, was a small quarto volume, and was the first of a series of small books, chiefly in blackletter, without illustrations, which appeared during the next 30 years. They were all more or less reprints of Banckes, with sundry additions and alterations; though after a fashion not unknown at the present day their publishers did not hesitate to associate the names of Macer, Linacre, and Askham with the book in order to give a fictitious importance to it. In remote country places, and we fancy in the East-end of London, a little book called "Napoleon's Dream-Book" may still be bought. Mr. Barlow has examined a number of these little herbals and has compared them from a bibliographical point of view. His researches have led him to the conclusion that the origin of the herbal "will probably be found in one or more of the numerous fourteenth or fifteenth century manuscripts on the virtues and properties of herbs which are still preserved in various libraries of this country." Banckes' Herbal and its successors are very little known, so that Mr. Barlow's careful description and comparison are a most useful link in the chain of medical historical bibliography. The remainder of his paper is devoted to the great illustrated sixteenth and seventeenth century herbals. These works, in addition to their medical ideas, are of great value as illustrations of the rise and progress of botanical drawing. Such are the beautiful plant drawings of Fuchsius, 1542, whose name is known to everyone by the fuchsia having been named in his honour. The large English herbals mentioned above were nearly all illustrated with figures by continental artists, and as the books are secret it is useful to know that many of the illustrations will be found in a handy form in R. G. Hatton's "Craftsman's Plant Book."—*The Lancet*, October 18, 1913.

Social Reform Legislation.

Legislation with the view of bettering the human race, that is to say the physical and mental attributes of our breed, is going merrily on. We are unable to furnish a complete list of those States which have some eugenic law already on the statute book, but so far as it goes the following is exact. Among those who have made sterilization of defectives of various kinds a legal procedure are the following: Indiana, Washington, California, Connecticut, Nevada, Iowa, New Jersey, New York, Wisconsin, Michigan, and Kansas. With the well intentioned plan of preventing the spread of venereal disease through marriage, the following States have thrown certain impediments in the way of marriage license procurement: Michigan, Utah, Washington, North Dakota, Indiana, Pennsylvania, and Wisconsin. These impediments vary from simply requiring the affidavit of the candidates themselves that they are free from disease, as is the case in Washington, to the procurement of a physician's certificate of health based upon an examination which the doctor must swear he has made according to the recognized clinical and laboratory methods, as is the case in Wisconsin. Practically all the States which have so far legislated on either of these subjects, the sterilization of the unfit or the spread of venereal disease through marriage, have passed laws which are open to the most severe criticism. The most of them bear evidence of hasty preparation and construction. Legislation has apparently outrun the findings of the eugenists themselves. In connection with this subject, it is well to remember that research is a basic function of the State. It would be wise economy to spend time and money to ascertain the exact nature of the principles which underlie the inheritance of good or bad germ plasm before attempting to correct evils by methods which anticipate the results of careful scientific investigation, and which may eventually be ascertained to rest upon entirely unsound conclusions. With her usual conservative custom, Massachusetts has recognized the fact that eugenic legislation should be undertaken with the greatest caution, if at all, and has empowered and directed her State Board of Insanity, acting jointly with the State Board of Health, to investigate the subject and report to the general court early in the coming year whether further impediments

to marriage should be imposed in the Commonwealth. At the coming sessions of the various State legislatures, it would be good policy to emulate the State of Massachusetts and provide for calm and deliberate investigation, rather than enter upon another winter of riotous eugenic legislation.—*New York Medical Journal*, December 20, 1913.

The Bane of Sulphur in the Gas-Supply.

In spite of the improvements which have been made and which are being prominently brought into public notice just now in regard to the applications of gas to domestic service, there undoubtedly remains one reproach which, we are surprised, the great gas industry does not seriously concern itself to remove. We refer to the fact that, however completely or satisfactorily gas is burnt, sulphur dioxide or trioxide is a most objectionable constituent of the products of combustion. It is not only a constituent which corrodes metal fittings, attacks books, ceilings, and many domestic appurtenances, but it is also objectionable to the respiratory organs. The admirable burner known as the inverted gas burner has done much to bring gas lighting to a high pitch of excellence and efficiency, but owing to the sulphur in the gas its metallic parts soon corrode and perish. Even when the metal fittings are replaced by porcelain or similar material there is still a destructive action. It would be so much pleasanter if gas could be burned without showing these corrosive effects, if the ceiling did not blacken, if the metal parts of the gas stove did not lose their original attractive tone, if offensive deposits did not collect in and about the initially bright metallic burner; and these troubles would probably be avoided if gas were supplied quite free from sulphur. If the products of combustion were purely carbonic acid gas and water, probably most, if not all, of this mischief would be averted. At one time there was a Parliamentary restriction in regard to the amount of sulphur in gas, the gas companies being required to keep the total sulphur in the gas distributed down in about 20 grains per 100 cubic feet. As a matter of fact, under this requirement the companies kept the amount down to 12 grains.¹ In 1906, however, the restriction ceased owing to the increased economical usage of gas, and then the gas

supplied frequently contained 48 grains of sulphur per 100 cubic feet. The companies saved money, of course, because the removal of this restriction meant that they could do without a purification process which was expensive or troublesome to carry out. The gas supplied, however, proved so detrimental to the metal work of burners and fittings that to save their own reputation a method of partial purification was again brought into requisition. At the present time, however, London gas contains still an amount of sulphur which cannot be overlooked in view of hygienic, artistic, and economical considerations. It averages about $24\frac{1}{2}$ grains per 100 cubic feet. We are confident in saying that the biggest march forward that the gas companies could make in their own interests and in those of the public would be made by removing the whole of the sulphur impurities of the gas-supply.—*The Lancet*, November 1, 1913.

An Open Safety-Pin for Ten Days in the Œsophagus of a Baby.

In the *South Africa Medical Record* of Oct. 11th, Dr. T. G. Blackburn has reported a remarkable case in which an open safety-pin remained for ten days in the œsophagus of a baby aged 3 months without producing any symptoms. The child was admitted into the Provincial Hospital, Port Elizabeth, with the history that she had swallowed a safety-pin. There were absolutely no symptoms; she was bright, happy, and laughing, and took the breast as usual. On the next day a radiogram was taken and clearly showed the pin fixed in the œsophagus, open, with the point upwards about opposite the middle of the sternum. Interference was considered dangerous. Extraction upwards could be performed only if the point could be grasped and so prevented from doing irreparable harm to the œsophagus—a fact of manipulation practically impossible in such a narrow space. Trying to dislodge the pin had also its dangers, because if the bougie passed beyond without dislodging, on withdrawal it might drive the point into the œsophageal wall. Taking all the points into consideration, as well as the fact that the child was suffering no inconvenience, it was decided to wait, carefully watching the condition daily on the fluorescent screen. A week after admis-

sion the child first showed symptoms. She had crying bouts and was more restless, though there was no rise of temperature or vomiting. This condition continued for three days, and as the pain was thought to be due to commencing ulceration of the œsophagus it was decided that something must be done. She was placed on the X ray couch with the tube underneath and the fluorescent screen on top. A metal bougie large enough to fit the œsophagus was then passed till it was seen to touch the blunt arm of the pin. On applying slight pressure, the pin was dislodged and passed down behind the cardiac shadow and appeared in the stomach. The pin was now in an accessible position, but it was decided to give Nature another chance and to see whether the pin would turn shut end down and be passed per vias naturales. Two days later it was seen to be fixed at the pylorus open and down. As nothing further was to be gained by waiting, the stomach was opened through a median incision made just below the xiphoid cartilage. The stomach and pin were brought to the incision. A slight incision over the blunt end allowed easy extraction. Three fine sero-muscular sutures closed the stomach opening and purse-string suture around this was used for security. The child stood the operation well and six hours afterwards took the breast. Recovery was uneventful.—*The Lancet*, December 20, 1913.

Pituitary Extract in Threatened Mammary Abscess.

J. A. Henton White, in the *Practitioner* for September, 1913, states that while the employment of pituitary exact in the condition mentioned is not commonly thought of, experience leads him to consider the drug very useful. It has been experimentally shown that within a few minutes after the injection of pituitary extract the flow of milk is much increased, owing to contraction of the muscular fibres of the lacteal duct walls. When these ducts contain pus and are blocked, this action is a useful one, and in two or three instances the author has found a threatened abscess to undergo absorption soon after giving pituitary exact — *New York Medical Journal*, December 27, 1913.

Death Due to Intravenous Injection of Neosalvarsan.

Dr. B. Lapowski reported a case of an infant, the first child of a syphilitic mother, born in May, 1913. The first dose of neosalvarsan was injected August 30th, and was not followed by any untoward result. Twelve days later a second intravenous injection was given, at 3 P.M. Until 6 P.M. the child remained well and lively, but then was seized with convulsions. These first convulsions were recovered from, but at 11 o'clock a second series set in, and the patient died comatose at 4 o'clock the next morning; the fatal result being due to arsenical poisoning. No autopsy was made, but arsenic was found in the urine and in the spinal fluid. In commenting on the case, Doctor Lapowski said that the dose of the remedy was carefully graded to the age of the infant, and that in making the injections every possible precaution was observed. In view of such cases, the intravenous injection of salvarsan and neosalvarsan was always a risk. Until they had more definite knowledge concerning these agents, which would enable them to avoid like catastrophies, he thought it would be advisable that their employment should be more restricted, and that they should depend more on the older methods of treating syphilis.—*New York Medical Journal*, December 27, 1913.

Hippocrates and Modern Medicine.

Dr. Eduard Baumer, of Berlin, describes in an essay *Der Hippokratismus*, some of the remarkable conditions in the medicine of the present time and points out the necessity of returning to the principles of Hippocrates.

The disciple of modern medical science, entering into practice armed with a great amount of knowledge and fairly trained in exact methods, finds sooner or later that scientific glory is not all sufficient, not all reliable. He finds that one thing alone is essential—to know how to heal—to become an adept in the art of healing. All knowledge and all science are of value only as a means in the service of the healing art; science is never the art itself.

The wonderful progress made in the natural sciences during the nineteenth century has brought to the front great changes in medicine. With new methods of investigation discoveries after discoveries have been made, and the beneficial influence of natural

science cannot be overestimated. Facts innumerable have been disclosed—so many, indeed, that it has become impossible for *one* man to grasp them all ; so many that even a specialist cannot master his entire specialty, and specialisms of specialisms have arisen. The whole body of investigators exerting themselves throughout the year are bound to make new discoveries and to publish them ; hence a surprising growth of medical literature. And who is able at present simply to survey the valuable publications, not to speak of the ability to separate the wheat from the chaff?

Hippocrates was the first to lay down the basis and the principles of the healing art for all time, and Hippocrates repeatedly in the course of history has been the salvation of medicine. The genuine Hippocratism lives in eternal youth, because the observations of Hippocrates, free from theories are drawn from the inexhaustible well of Nature, and retain, therefore, their value independent of even the most progressive phase of medical development. Hippocrates inspires with fresh and youthful ardor the researcher who has entered into his spirit, because he does not demand faith in scientific dogmas, but, on the contrary, incites step by step to sober observation. It is true we possess a greater fund of facts and a more intimate knowledge of anatomy and physiology than he, but nevertheless we can learn from him. He knew no medical "science," he only knew the art of healing.

When we take up the study of Hippocrates we are surprised how modern everything sounds, for we have entered on this study with the idea in our minds. "What can this old Greek teach us, who are so far advanced in knowledge and technic?" We forget that it was Hippocrates who established the fundamental principles of the healing art. The principles and foundation of our art undergo no change, no evolution; hence the eternal youth of Hippocrates. Hippocratism has had, and always will have, no historical mission. He liberated medicine from dogmatism and faith in authority even during the Middle Ages.

What is the significance of Hippocratism in modern medicine? The division of medicine into more and more specialties must lead to untenable conditions, and Hippocratism alone will have to be our salvation.--*New York Medical Journal*, December 6, 1913.

Etiology and Treatment of Beri-Beri.

Although beriberi is, strictly speaking, a tropical disease, it is nevertheless one which may at any time fall under the observation of the physician in seaport towns of the temperate zone. This fact, together with our new policy of national expansion into tropical regions, makes it desirable that the profession at large should maintain an active interest in the researches conducted under the auspices of the Philippine Bureau of Science into the etiology and treatment of this disease. For many years there has been a practical consensus that the multiple neuritis which is the concomitant of beriberi is in some way related to the ingestion of rice. The older text books speak of the disease as being caused by the ingestion of spoiled rice. The later ones lend themselves to the view that hand polished or highly milled rice is responsible for the condition. The truth appears to be established that in the external layers of the rice grain there exists a substance, the absence of which is in some way connected with the development of beriberi. One of the proximate principles of this substance has been isolated by Young and is variously known as Young's basic substance or "beriberi vitamine." The researches of Vedder and Williams seem to indicate that this basic vitamine has a specific action in preventing the development of the paralytic symptoms of "dry beriberi," whereas another substance in the principal layers of the rice grain is specific against the edema and heart failure arising in connection with "wet beriberi." Whether the disease is a purely nutritional one dependent upon the absence of phosphorous-containing vitamins in spoiled or highly polished rice, or whether it is due to an infection against which the vitamins act as specific antidotes are points which the researches of Vedder and Williams (*Philippine Journal of Science*, June, 1913) do not appear to have satisfactorily solved. Their investigations have resulted, however, in the finding of what amounts to a practical cure for the disease. For although its essential causation remains unknown, the fact has been demonstrated that the administration of unhydrolyzed extract of rice polishings is curative for the symptoms of dropsy and cardiac failure that are encountered in some forms, whereas Young's basic vitamine promptly relieves the paralysis which is sooner or later developed in all chronic forms.—*New York Medical Journal*, December 6, 1913.

Johannes Evangelista Purkinje.

Now that the study of the history of medicine is coming to its own and the memory of its pioneers is being kept green, we should be grateful to those who collect for us from scattered sources information about men of whom very little is generally known. We all have a nodding acquaintance with most of the historical leading lights of medical science, but there are some who are to us merely names derived from eponymous terms descriptive of parts of the body, diseases, methods, and so forth. Dr. Isaac Ott, of Philadelphia, in his recent introductory address at the opening of the Medico-Chirurgical College of that city, has done service in regard to Purkinje, with whose name we are all, of course, familiar, though for many of us probably it has little if any connotation beyond giving a name to certain cells and fibres. Johannes Evangelista, Purkinje was born in 1787 at Libochowitz, in Bohemia, on the northern border of Austria, a province which also produced Meudel and Czermak. He graduated at Prague in 1819, when he became assistant in the anatomical institute. He became acquainted through Goethe with Alexander von Humboldt, who, in conjunction with Rast, the anatomist, recommended him for the chair of physiology at Breslau, to which he was appointed in 1821, at the beggarly stipend of 800 thalers per annum, out of which he had to provide for demonstrations and experiments. There was practically no provision for instruments or apparatus, and when in 1830 Purkinje asked the curator for a microscope, which then cost 200 thalers, the latter replied that so costly an instrument would necessitate a joint requisition from the professors of physics, astronomy, anatomy, and botany, and himself! It was obtained for their joint use, but two years later Purkinje succeeded in establishing a claim to its exclusive use. Now, however, another difficulty faced him—that of a suitable demonstration room, for his room in the old astronomical institute had been taken from him through the animosity of Otto, the professor of anatomy, who from the first had taken exception to his speech (his native tongue was Czech), and considered that though he might be a useful *privat-docent*, he was not up to professorial standards. However, another room was found for Purkinje, who in 1831 made a request for an independent physiological building, a laboratory assistant and a servitor, and a grant towards the institute,

but these were refused on the ground that no German university had a separate building for physiological work. Even when the new anatomical institute was built, Otto forestalled Purkinje by claiming the only available room for his official residence. But Purkinje was not to be daunted. He arranged a physiological laboratory in his private residence, and there he continued the work with which his name is now associated all over the scientific world. To refer only to some of his discoveries, Purkinje's figures, his study of the curvatures of the eye, his method of lighting up the retina (in some sort anticipating Helmholtz), his observations on vertigo, his general idea of the cell—published two years before Schwann's classical work, — the Purkinje vesicle in the ovum, the Purkinje corpuscles in bone, the interglobular layer in dentine, the ciliary movement in the respiratory organs, the sweat glands and their ducts, the stomach glands, the touch papillæ, the action of the pancreatic juice on albumin, all testify to his activities. A more liberal curator in 1836 obtained for Purkinje a grant of 3800 thalers and a site for an independent physiological institute which was opened in 1839—the first physiological institute in the world. Unfortunately the maintenance funds of the institute were not commensurate with the institute itself, and his subsequent work was mainly microscopical. In 1850 Hungarian politics took him to Prague, and his scientific labours were practically over. He died in 1869. His career was an example of the way in which a determined mind overcomes opposition and surmounts obstacles.—*The Lancet*, December 13, 1913

The Dependence of Leprosy on Fish Eating.

A doctrine of the late Sir Jonathan Hutchinson which did not gain acceptance is that leprosy depended on fish eating. Yet there was none he advocated with more persistence during his long life. Indefatigable industry and all the resources of a subtle intellect, equally keen in observation and in deduction—and what clinician was so keen?—were exerted in vain. He marshalled an extraordinary amount of evidence—clinical, historical, and geographical—his usual dialectic skill. In his old age, when most men would have considered their work done, he made two voyages—to South Africa and India—to investigate certain matters on the spot. He main-

tained that the only hypothesis which explained all the facts was that 'leprosy' was due to eating decomposing, badly cured fish. We need not enter into his arguments, as they are so well known. They can be found in full in his book "On Leprosy and Fish Eating." That they are very strong cannot be gainsaid, but they failed to carry conviction because he could produce no evidence that the bacillus lepræ is in any way associated with decomposing fish. While insisting that the "circumstantial evidence is overwhelming" that decomposing fish is the cause he was not sure as to the manner in which it acted, and made several suggestions, without committing himself to any. As to the discovery of the bacillus in fish. "I am," he said, "much less sanguine than I was some years ago." He suggested that its occurrence might be "exceedingly rare" and that contamination of the fish might be "usually effected by the hands of a leper fish-curer." Many regard this fish hypothesis as only an eccentricity of a great mind. But some who have come under its influence will remember that Hutchinson was many times right when the whole weight of opinion was against him, and that his clinical acumen often penetrated successfully far beyond the range of the pathology of his time. They will read with interest some recent observations which tend to supply the deficiency of bacteriological evidence of the fish hypothesis. In the *American Journal of the Medical Science* for November, Dr. A. J. Smith, professor of pathology, Dr. K. M. Lynch, instructor in gross morbid anatomy, and Dr. D. Rivas, assistant director of the Laboratory of Tropical Medicine, University of Pennsylvania, have published an article on the Transmissibility of the Lepra Bacillus by the Bed-bug. They have shown that this animal on biting lepers may take the lepra bacillus into its alimentary canal. There for a time the bacilli increased in size and apparently in numbers, but they eventually disappear. Infected bugs were found sometimes to transmit the bacilli to the skin of an animal bitten by them, but no evidence is produced to show that in man the disease is communicated in this way. Only as a digression is the fish hypothesis discussed. The authors confirm from their experience the success of Duval and his associates in readily infecting fish with the bacillus lepræ. The organism rapidly appears in the various organs of the body, though the fish apparently remained unharmed. The authors are inclined

to agree with Clouret and Duval that fish and other cold-blooded animals, such as turtles and snakes, may represent the true habitat of the lepra bacillus, and that warm-blooded animals, including man, are relatively or absolutely resistant and require special dosage to ensure infection or special predisposition to become infected. That the disease may be acquired from infected and uncooked or imperfectly cooked fish, they think, does not seem very improbable. The belief that rotten fish is particularly dangerous they consider to be singularly substantiated by the fact that the cultivation of the bacilli of leprosy in the laboratory is favoured by media containing the products of digestion and cleavage of proteids. While unwilling at this stage to advocate further the hypothesis of Sir Jonathan Hutchinson, they consider it to be worthy of more careful study than it has received.—The *Lancet*, December 13, 1913.

The Varnished Frog.

It was formerly held by physiologists, who sought for an explanation of the death of amphibious animals which has been subjected to the process of varnishing, that the fatal result was caused by retention of the products of cutaneous secretion and consequent toxæmia. Dr. Vittorio Puntoni, of the University of Bologna, has recently conducted a series of experiments on varnished animals with a view to ascertain the effect of this process on the digestive system and the intestinal micro-organisms. His results, which have been recorded in the *Bollettino delle Scienze Mediche*, seem to show that death from suppression of the cutaneous function is not due solely, as many observers have affirmed, to a progressive cooling down of the organism, but also to toxic and nervous factors. Even modifying the value of these toxic and nervous factors, the conception of "death by cooling" should be expressed more accurately by "death from disturbance of heat regulation." The fact is that the cooling of varnished animals takes place only if they are kept in surroundings of a lower temperature than that of their body, while if they are kept in a warm atmosphere of 38°C. or more death occurs from hyperpyrexia. Dr. Puntoni found that the interference with the function of the skin, besides acting generally on the whole organism, had a particularly injurious effect on the stomach and small intestine, and produced changes in the normal intestinal flora consisting of a

bacterial auto-depuration of the bowel and variable modifications in the virulence of *B. coli*. The intestinal wall in varnished animals becomes permeable to micro-organisms of a pathogenic nature when artificially introduced. Thus *B. anthracis*, free from spores, is able to infect the organism through the intestines and reproduce the disease; *B. typhosus* passes into the circulation, an interesting fact, since typhoid fever is not a disease having its seat in the intestine, but a general infection due to the penetration of the specific agent into the general circulation and lymph organs. Also the cholera vibrio, which usually has but little affinity with the blood plasma, is able to pass under these conditions through the intestinal barrier and multiply in the blood. The passage into the circulation of micro-organisms in general and of the cholera vibrio in particular, is in relation not only with lesions in the intestinal wall but also with changes in the bactericidal power of the blood serum, which is markedly lessened. These conclusions have an eminently practical interest in their relation to certain natural conditions, such as the deleterious effects of moist, warm climates and the use of improper clothing, which act by disturbing the cutaneous function. In fact, by experimentally subjecting animals to the action of moist heat, the same effect is observed as in animals varnished and kept in a temperature of 38°—39C., and an explanation is thus found of the action of natural conditions in predisposing to gastro-intestinal affections, whether ordinary or specific.—The *Lancet*, November 22, 1913.

The Greenland Vikings and the White Esquimaux.

To medical men the death or decay of white races in hot or distant climates is not less interesting than the degeneration of a family or of individuals. The "Poor Whites" of the West Indies, who are the decadent descendants of Cavaliers sent into slavery by Oliver Cromwell, survive lugubriously, pathetic representatives of a once high-hearted class; but other white races have completely disappeared, leaving behind them only a ruin or two, a few graves, a tradition vaguely repeated by savages, an occasional racial cast-back among yellow or dark-skinned supplanters. We are thinking more particularly of the Norsemen of southernmost Greenland, who flourished for some 300 years, then fell into decadence, and utterly disappeared towards the close of the fifteenth century. History

records that in about the year 985 A.D. Eric Raudi, the Red or Ruddy, an Icelandic outlaw, founded two colonies, Wester and Oestre Bygd, to the west of the southern cape of Greenland, a name of hopeful sound adopted by him to attract colonists. Eric the Red is a pioneer among European explorers. Though a pagan, he seems to have been a singularly good man, and he was a careful explorer. It was his son Leif who is credibly supposed to have discovered "Vine-land the Good," or America, with which his people afterwards traded. They constituted, in fact, a flourishing trading republic, keeping up their connexion with Bergen and with Iceland for centuries. In 1448 a fleet of "heathen," supposed to be English, attacked them. Then in successive waves they were invaded from the north by the Esquimaux, at that time ferocious, and by the black Death from overseas. Their connexion with Europe ceased, and though in 1492 an effort was made to reopen communications with them nothing came of it. In 1496 a bishop, appointed to the Greenland see, sailed, but could not reach it. The last of their bishops died in Europe 1540. He had never visited them. Their civilisation probably flickered out after 1450. "Darkness falls," says Mr. William H. Babcock, their latest historian, "but the uncertainty and the marked pathos of this chapter of old history makes any item (of information) very welcome." One such item is a mysterious story of voices, for the colonists were perhaps *heard*, though not seen, by an Icelandic bishop, Amund, of Skalpolt, in the sixteenth century, who was driven by stress of weather so close in shore that his ears caught, or he believed so, from the deck of the ship voices of Norsemen on some track near by, and the passage of cattle and sheep. This was at Heriulfssness, now an Esquimaux settlement with an Esquimaux name. The voices from the shadow were the last sign of life given by perhaps the earliest European colonists, forerunners of Columbus. In 1585 John Davis, the explorer, found their settlements in the hands of the Esquimaux, who retained a few dim traditions of white men. They had left behind them a fourteenth-century church (the cathedral of Gardar) some 17 ancient houses, one of which, from its decorations, has been identified as that of Eric the Red, and a few coffins containing European corpses, with faces wrapped in coarse antique cloth. In 1721 the "Apostle of Greenland." Hans Egede, made determined efforts to find "the

lost people" along certain green inland floods beyond the ice-wall of the coast. Southern Greenland, it should be remembered, has the climate of Iceland or of Northern Norway. He found nothing, nor did a subsequent explorer, Lieutenant Holm, in the last century. Recently, however, Herr V. Stefansson has reported the existence of white Esquimaux on Coronation Gulf, far to the north of the original Icelandic settlements. It is said that some of these tribesmen have light hair and that their language contains Norse words. Romantic as this may seem, it is not impossible nor yet improbable. Disease, the mediæval Black Death, may very well have decimated the ancestors of these people, and their weakened remnant may have been absorbed by invading savagery and carried northward. Many instances are recorded of similar absorptions. An Indian town in Chili, to take one case, is known to be mainly descended from Spaniards, who there held a fortress, erected by a viceroy for the purpose of overawing the natives. The Norse Greenlanders in their day produced the "Lay of Atli," and perhaps contributed to the verse Edda. They thus formed part of the grand literary movement, which in Iceland produced the "Prose Edda," that sublime and little-known poem. To the scientific psychologist the mental changes taking place in a vanishing race are as interesting as physical decay to the pathologist. When did these white Esquimaux, supposing them to be descendants of Norsemen, begin to forget their traditions and their origin? And who among them was the last to remember that he was of a white race?—*Lancet*, November 22, 1913.

A Rapid Method of Staining Tubercle Bacilli.

As the result of several experiments, Mori (*Rif Med.*, October 25th, 1913) recommends the following method as being very quick and reliable. The material is spread lightly on the cover-glass and dried over the flame as usual; the cover-glass is then immersed for fifteen seconds in a cold solution of carbolic fuchsin (fuchsin 0.5 gram, alcohol 10 grams, phenol 2.5 grams, aq. dest. 100 grams), washed in water, and then immersed for fifteen seconds in a solution of methyl blue (ac. sulphuric. 1 gram, methyl blue 1.5 grams, aq. dest. 100 grams), dried, washed, and mounted. Attempts at differentiating para-tuberculous bacilli and other acid resisting bacilli were also made, but the results at present are not sufficiently reliable to be depended on.—The *British Medical Journal*, November 29, 1913.

Heliotherapy.

Poncet and Leriche (*Bull. de l'Acad. de Med.*, October 12th, 1912) give an account of the results of treatment by insolation of nearly 300 cases of the various forms of local tuberculosis. They first practised heliotherapy in cases of "white swelling" of the knee, coxalgia of tuberculous origin, and the success obtained led them to extend this method of treatment. According to the authors, heliotherapy is available in every country, and some of their most successful results were obtained in quite unlikely situations. They found that the intensity of solar radiation increased notably with the height of the sun from the horizon, and was aided by the purity of the air. Snow also considerably reinforces the active power of light. Heliotherapy by the sea and at an altitude was each in its own way equally beneficial. The drier air of the hills, the intense insolation among the snows was found to be particularly beneficial in osseous tuberculosis with existing fistulae. So, too, in the case of visceral active tuberculous lesions, in which sea air ought to be interdicted. Adenopathies, scrofula, rickets, and the osteo-articular deformities* of childhood are, on the contrary, more benefited by heliotherapy by the sea. Serious accidents may occur if cure is not taken at the commencement of treatment. There is in any case very frequently lassitude, headache, loss of appetite, and febrile reaction. The authors recommend a séance of ten minutes to begin, the body being naked and the head and neck protected by an umbrella or large hat. This is to be continued for four or five days. Then fifteen minutes are given night and morning. This to be progressively increased up to three hours night and morning. Revillet has noted that where pigmentation was most rapid, recovery was quickest; whereas the prognosis is not so good when the skin does not burn. This rule has been proved to be by no means absolute, however. The authors confess that renal tuberculosis is not successfully treated in this way as a rule, and agree that in such cases early nephrectomy is the only satisfactory treatment. On the other hand, they have had very good results in vesical and prostatic tubercle. The most brilliant results have been obtained in tuberculosis of the peritoneum; but if in these cases there are adhesions and abundant fluid, they recommend laparotomy as giving more rapid results than insolation alone. Cases of tuberculous adenitis present certain peculiarities. They resist simple heliotherapy, but respond to a combination of this with sea air and

sea-water baths. In tuberculous osteo-arthritis heliotherapy, in the authors' experience, has greatly minimized the necessity for resection or amputation. The exception is osteo-arthritis accompanied by intra-articular cold suppuration, which is particularly resistant. Resection of the knee is a comparatively rare occurrence. Immobilization with insolation cures the greater number of cases of white swelling. If in the case of the extremities there is much pain and a faulty position of the limb, the authors employ continuous extension. Many cases, especially in the young, are cured in two or three years without apparatus of any kind. When operative measures have to be undertaken, heliotherapy is a valuable post-operative procedure. In osseous tuberculosis, such as Pott's disease, insolation is invaluable, and even in the fungous type of osteitis the treatment rapidly modifies the lesions for the better. Franzoni, indeed, has recently published photographs showing the different stages of the spontaneous expulsion of a sequestrum under the influence of heliotherapy. The authors' conclusion is that the method of treatment ought to occupy an honoured place in modern therapeutics.—*The British Medical Journal*, July 5, 1913.

Physicians and Population.

The total number of physicians in Europe is 160,000. Of these England has 7 to every 10,000 inhabitants, Germany, France and Italy about 5, Brussels shows 24 to every 10,000, in contrast to Amsterdam which has only two in an equal number of inhabitants. The situation in Europe is apparently less acute than in America. In Boston the estimated relation of physicians to patients is 1 to every 392 inhabitants, or slightly over 25 to every 10,000. It is evident that there are more physicians than are necessary to protect the health of the people. The aim should constantly be in medicine to eliminate the unfit, a process which goes on partly by natural means and partly by general raising of standards. If, in the future, prophylaxis is to take the place of individual treatment, we may well look forward to a complete readjustment of the medical situation, possibly on socialistic lines. In the meantime, whatever the future may have in store for us, there is no menace in the number of physicians. In this, as in other social and economic situations, the law of supply and demand will doubtless solve the problem.—*The Medical Times*, October, 1913.

Gleanings from Contemporary Literature.

EXAMINATIONS, EXAMINERS AND EXAMINEES.

Delivered at the Opening of the Winter Session at St. George's Hospital Medical School on Oct. 1st, 1913.

BY SIR WILLIAM OSLER, BART M.D., F.R.S.

REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF OXFORD.

GENTLEMEN,—In every department of human knowledge men are asking guidance in the solution of a world-old problem—how to train the mind and heart and hands of the young. The past and the present are in the melting pot—the moulds are ready and all await with eagerness the result of the casting, and none with greater eagerness than our own profession. For we are in a quandary. Naturally conservative, we are bewildered by the rapidity of a forced progress and change. There is a new outlook in every department—not alone in the fundamentals of science and in methods of practice, but in the relations of the profession to the public and to the State. The actual care of the sick, once our sole duty is now supplemented by such a host of other activities, social, scientific, and administrative, that an ever-increasing number of our members have nothing to do with patients as such. But the chief difficulty is the extraordinary development in every subject of the curriculum—a new anatomy, a new physiology, a new pathology, new methods of practice, to say nothing of phenomenal changes in physics, chemistry, and biology. Everywhere increased complexity and mind-burdening terminology. What is the teacher to do? And more important, What can the poor student do, confronted with so much new knowledge and a Rabelaisian onomatomania? How simple was a cell in the days of Schwann and of Schultze—nucleus, nucleolus, protoplasm, and cell membrane; to-day in one of the very briefest of recent descriptions I counted 40 new names, not one apparently superfluous. Turn to the index of a new treatise in embryology, to a work on immunity, or to a textbook on neurology, and you will appreciate the extraordinary complexity of the diet of the modern student. Even the titles of the journals startle, and to read intelligently an article in the *Zeitschrift für Chemotherapie* or in the new archives dealing with immunity and metabolism requires a special education.

The truth is, we have outgrown an educational system framed in simpler days and for simpler conditions. The pressure comes hard enough upon the teacher, but far harder upon the taught, who suffer in a hundred different ways. To help you to realise this pressure and to suggest measures of relief are the objects of this address.

EXAMINATIONS AND THEIR RELATIONS TO EDUCATION.

What a student knows and what he can do—these are judged by examinations, oral, written, and practical. Tests of progress, tests on

behalf of the public of fitness to follow certain callings, they have always loomed large in educational systems. At the best means to an end, at the worst the end itself, they may be the best part of an education or the worst—they may be its very essence or its ruin. Helpful if an integral part of the training, they may, and do, prove the intellectual ruin of many good men. Long practice as an examiner—year by year since 1875—in many subjects, in many methods, and in many places, an intimate relation with a large body of students, and a keen interest in medical education give me the assurance, if not of wisdom, at least of experience. Moreover, at the old universities survives a mediæval tradition of the omniscience of the professor, and with my brother Regius of Cambridge I enjoy the rare privilege of examining in every subject in the curriculum, from organic chemistry to obstetrics, a privilege with this advantage—it enables me to see the work of many examiners.

Regarding examinations, I have one question to ask—Are they in touch with our system of education? and one suggests to make—That from the day he enters the school, in laboratory, class-room, and wards, the work of the student should count largely, in the final estimate of his fitness.

The Influence of Examinations on Medical Education.

Apart from a general feeling of dissatisfaction with the present system, two things strongly suggest a negative answer to the first question. As a discipline of mind and memory examinations play a leading part in all educational schemes. How they may finally control and sterilise the mind of a nation may be read in the story of China. For this has come about, not from lack of brains, not from any failure to appreciate the value of learning, not from any defect in the system itself, which is more rigid and exacting than anything in Western life, but from the blighting influence of an education directed to a single end, the passing of examinations. To test an education by its practical results at the table is to sin against the spirit of the Greeks, who first taught the fundamental lesson that the pursuit of knowledge to be productive must be disinterested. Nothing is more fatal to a true intellectual training than a constant preoccupation with its practical results. To be of any value an education should prepare for life's work. To train the senses for observation and the mind for reasoning, and to acquire a knowledge of the human machine and its disorders, a man spends five or more years at a medical school. Given a knowledge of the sciences on which it is based there is no more fascinating study, since medicine is the only one of the great professions engaging equally head and heart and hand. In its subject matter there is everything in its favour, and it is the easiest possible thing to carry out John Locke's primary cannon in education—arose an interest. With our present methods there is scarcely a subject which cannot be taught easily, and so many of them are practical, manipulative, and not at all difficult to acquire. To an inquisitive mind the study of medicine may become an absorbing passion full of fascinating problems, so many of

which present a deep human interest. In the long category of man's conquests none are more brilliant than those with which a teacher of medicine can inspire his class. It is hard indeed to name a dry subject in the curriculum. And yet in an audience of medical students such a statement now-a-days raises a smile. Why? Because we make the examination the end of education, not an accessory in its acquisition. The student is given early the impression that he is in the school to pass certain examinations, and I am afraid the society in which he moves grinds this impression into his soul. Ask *at* what he is working, and the student will answer *for* his first M.B. or his final. The atmosphere is Chinese, not Greek, and too often the one aim is to get through. We have become quite shameless about it, and practically admit a failure in our teaching when we advertise special tutorial classes for the different examinations, and consign a large proportion of our pupils to the tender care of "grinders"—and to no purpose! The spirit is taken out of instruction, and teacher and taught alike go down into the valley of Ezekiel—where they stay among the dry bones.

The Number of Rejections.

And a second circumstance proclaims loudly how out of touch are our tests with our teaching. The qualifying examinations of this country are well organised and admirably conducted, and, speaking by the book, I may say that nowhere is the knowledge that a man can use so freely tested in the laboratory and at the bedside. And it has been so for several generations, yet year by year the General Medical Council issues a report that gives any teacher food for serious thought, as it demonstrates, beyond peradventure, how completely out of touch he or the student, or both has got with the examiner. A medical school is a human factory, turning out doctors as the finished product at the end of five years of careful preparation and fitting of the mental machinery. Failure is incidental to every human effort, and even the Rolls-Royce Company turns out cars from their shops that fail in the tests, but not many. But from our shops, after five long years or even more, we send our medical motors to be tested for the road by the official experts, and nearly one-half are declared to be defective and sent back to the shops. Use and Wont, those "grey sisters," have so dulled the edge of this bitter experience that we have become accustomed to conditions nearly insupportable. Year by year for a generation the returns in the two great final subjects, the most attractive and the easiest to teach, show from 35 to 45 per cent. of rejections.

To the question much thoughtful attention has been given, and in the General Medical Council so far back as 1896 Mr. Pridgin Teale introduced a motion with the following preamble: "That the present system of accumulated examinations and the enormous increase in the number of rejections resulting from it are not only unjust to the student but damaging to medical education." Mr. Teale pleaded wisely and forcibly for a reduction of the examinations and for the substitution in certain subjects of certificates from the teachers and class examinations.

The Council Reports show that the percentage of rejections at the final examinations has progressively risen from 12·4 in 1861 to 22·2 in 1876, to 34·8 in 1886, and to 41·9 in 1895. Mr. Teale, who quotes these figures, remarked that with the multiplication of examinations the more fatal do they become. The figures for the five years 1908 to 1912 show a continuation of the upward movement. Take the great final subjects, medicine and surgery, at the three Boards before which we may say the average student presents himself. I will put the collected figures as concisely as possible. The English Board: medicine passed 1842, rejected 1135, percentage 38·12; surgery—passed 1821, rejected 1506, percentage 45·23. Scotland: medicine—passed 489, rejected 653, percentage 57·18; surgery—passed 492, rejected 731, percentage 59·77. Ireland: medicine—passed 322, rejected 231, percentage 41·77; surgery—passed 326, rejected 239, percentage 42·30. In the five years a total of 4572 students were examined at the Conjoint Boards of the three kingdoms in medicine, of whom 2019 were rejected, a percentage of 44·16. Of 5105 examined in surgery 2475 were rejected, a percentage of 48·48. Take for comparison the three universities—Edinburgh, Oxford, and Cambridge—for the five years ending 1912. At the Scotch capital there were 985 examined in medicine, of whom 267 were rejected, 27·10 per cent.; in surgery 974, of whom 317 were rejected, 31·52 per cent. In Oxford, where the three final subjects are taken together, it is impossible to say upon which subject a man came down, but in the final examination of 135 candidates 47 were rejected, a percentage of 34·81. At Cambridge during the five years, in medicine of a total number 519, 365 passed and 154 were rejected, a percentage of 29·67; and in surgery of a total 603, 233 were rejected, percentage of 38·64.

There is not so much difference, you notice, between what may be called the pass men of the Conjoint Boards and the men entering the universities, and I do not believe there is any special difference in stringency between the Oxford and Cambridge examinations and those of the London Conjoint Board. There are two other examinations which the elite of the student body affect. How do they stand? All regret that in London only the select and the elect attempt to get the degree of their own University. And it is difficult! Twice in the past five years more students have failed than have passed the final subjects for the M.B. The total figures for the period are: of 1061 candidates examined 481 were rejected, a percentage of 41·01. And, lastly, to one other qualification, greatly prized, sought only by the very best men, the Olympic athletes of their classes, I will refer—the F.R.C.S. Eng. Consider, please, how carefully this group is trained—only the very best venture to compete, and they have a diet of which the intellectual calories are gauged with surpassing accuracy. There is no doubt they are our very best, the picked steeplechasers of our stables. How do they fare? I am almost ashamed to read the figures. Your ears have tingled already, but only those hardened by familiarity will not be shocked at the demonstration of such a chasm

between education and examination. Of 1186 men who have tried for the primary Fellowship Examination of the Royal College of Surgeons during the past five years 821 were rejected, 69·45 per cent. Of 680 men at the final Fellowship Examination 294 were rejected, 43·23 per cent. The high-water mark of examination futility was reached in May, 1912, when of 118 candidates for the primary Fellowship only 31 were approved. These are picked men, our very best students, the most carefully prepared, who rarely attempt the trial without months of extra study and attendance upon grinding classes. Of the ploughed I have known personally, many seem to have been over-trained, others had spent their time in unprofitable original research; but all, passed and plucked alike, I maintain, are of the highest type of our students, whose calamities proclaim to the world the breakdown of our present educational system.

The failure is general all along the line and in all grades—at the licensing boards, at the older Universities of Oxford and Cambridge, at Dublin and Edinburgh, at South Kensington, and at Lincoln's Inn-fields; with singular uniformity all tell the same tale. There have been uneasiness and talk, but too much self-satisfied indifference, and even after the famous rout for the primary Fellowship in May last year I am told that satisfaction was expressed with the scope and method of the examination! Satisfactory to the examiners, perhaps, though I doubt it; but most unsatisfactory to the teachers, most painful to the students, and by no means a pleasure to the public as represented by the parents.

HOW MAY RELIEF BE OBTAINED?

I venture to offer a few suggestions. First, by simplifying the curriculum to give the students more time. Allow the teachers a free hand in the matter of systematic lectures. Let them be reduced to a minimum or abolished altogether. One advantage they have—subjects may be dealt with which cannot possibly be illustrated in the wards. But such may be better presented in the “seminar” form, the senior students arranging the subjects among themselves under a skilled assistant. London students still have too many lectures in medicine and surgery to attend; Scotch students many more. I do not speak without experience when I say that the subject of medicine, for example, may be taught without the set lecture. The lecture has its value, a precious one from some lips a Watson's or a Trousseau's; but its day has gone, to give place to other methods better adapted to modern conditions. Think of the saving of time if the lecture list was snipped in half, or if the lecture was limited to a few subjects, such as physiology and pathology, and if it were an offence for a senior student to be seen in a lectureroom!

Then let us boldly acknowledge the futility of attempting to teach all to all students. Burn the anatomical fetish to which we have sacrificed long enough, and to our great detriment. Just glance at “Cunningham's Anatomy”—1465 pages, many in small types, not one of which is without a water-jump for the first Grand National of the medical student. It is

barbaric cruelty with so much ahead to burden the mind with minutiae which have only a Chinese value—a titanic test of memory. To schedule a minimum of the essentials should not be difficult, once the great principle is acknowledged that in all departments of the curriculum only a few subjects can be mastered thoroughly. I am afraid the secret of the tragic tale I have related lies in a quotation which Socrates made to Alcibiades:

Full many a thing he knew,
But knew them all badly.

I acknowledge the difficulty of defining in different subjects a minimum of the essential, but it is not insuperable, and such schedules are issued in some universities.

Secondly, relief may be obtained by giving credit for work done throughout the course, changing the present system of “signing up” for one of reports by demonstrators and assistants on the character of the work done by each student. Let all who teach examine. Let education and examination go hand in hand. Let the day’s work tell from the moment a student enters the school. Everyone from the junior demonstrator who supervises the student’s first dissection to the professor—all should weigh while teaching. Day by day as I see John Smith in the wards, and read his notes, and watch his clinical work and discuss the features of the patients, or as he narrates his case to the class about the bed and he and I have a Socratic dialogue, instruction and examination go hand in hand, and in such a way that at the end the formal tests should be but an amplification, and extension, and an inclusion of the scores of examinations which have been part of the routine of his life. Perhaps at present Utopian, this plan will be feasible in a new and reorganised generation; indeed, it is feasible now in self-contained universities. Once accept the principle that instruction and examination should go hand in hand and the difficulty is solved. The returns are automatically passed on to the head of the department. Yes, but someone will say, “Take the judgment of a group of young teachers? It is absurd!” Not a bit. They see more of the students, come into closer contact, and are better able to judge of the quality of their work than the professor, and much more than any outside examiner. According to the character of his work a student should acquire much or little merit, and should be able to take to the examination table enough to pass, or at any rate to make the final test in any subject *pro forma*. Where the classes are small, as in many of the provincial universities, this plan could be easily worked. I have had practical experience of it and came to the conclusion early that the judgment of the man who was fit to teach could be taken in estimating the progress of the student’s education. And the system is being adopted. A few months ago I went into the beautiful clinical and pathological laboratory of the new Toronto General Hospital, and in one room I found an examination in pathology going on. The candidate had a set of cards in his hands, on each of which were written the details of the post-mortem

examination he had made with a careful discussion of the case. Pass or pluck really depended on the cards a man held. He brought his marks with him—instruction and examination had gone hand in hand. I was delighted to hear from Professor MacKenzie that 'the system, introduced at McGill by my pupil and successor, the late much lamented Wyatt Johnston, had proved very successful in both Canadian schools.

Thirdly, simplify the examinations. Cut off some of the written papers. In the final subjects the long report on cases, the bedside *viva*, supplemented if need be by a special "oral," will give examiners the necessary knowledge of a candidate's mental outlook. If they will consider, not how much he knows, but how he knows what he knows, the long "written" is superfluous. As one watches a man handle a patient it is easy to tell whether or not he has had a proper training, and for this purpose 15 minutes at the bedside are worth three hours at the desk. We must substitute for the quantitative estimate the qualitative, and judge the student as much by manner as by matter.

Fourthly, when possible, evidence of original work should be substituted for examination. Think of the stimulus to British surgery if, in place of the Egyptian tyranny to which our best students now slavishly bow, the President and Council of the Royal College of Surgeons selected for the Fellowship each year the 15 or 20 of the men under 30 who had distinguished themselves most highly in surgical research. It would change the mental attitude of the younger generation, instil the spirit of Hunter into its members, and prevent the paralysing mental sterility that overtakes many good men who now spend precious plastic years in the dry drudgery of examination details.

Fifthly, compel no student to pass an examination twice in the same subject. At present brain and pocket alike suffer, and the burden could be lightened by a free reciprocity between the examining boards.

EXAMINERS AND THEIR DUTIES.

Men are usually very superior to the system in which they work, and so it is with examiners. After what has been said you may be disappointed not to hear a tirade against them; but I have had a singularly happy experience with my fellow inquisitors, whom I have found, as a rule, among "the mildest-mannered men that ever scuttled ships or cut throats." The two extreme types, the metallic and the molluscoid, illustrate inborn defects of character. The aggressive, harsh nature comes out strongly at the table, and the hard face, with its "what-the-devil-do-you-know" expression, sends a chill to the heart of the candidate, and it reaches his bone marrow when the first question relates, perhaps, to a serious mistake in his paper. Imagine the mental state of a poor chap greeted with, "What did you mean by saying that the ciliary muscle is supplied by the pneumogastric nerve?" And the worst of it is that the metallic examiner may have no sense whatever of his failings, but is rather apt to pride himself on a keen appreciation of his duties. I remember a hard-faced

inquisitor who took, so it seemed, the greatest pleasure in torturing his victims—dwelling with fiendish glee on all the small mistakes he could find, 'criticising the spelling, and ending on one occasion with the cheerful remark, "Mr. Jones, who taught you to write?" That evening, talking about examinations, I said in a joking way: "Judge Jeffreys, you are a heartless brute; I wonder some student has not assaulted you." He took it very much to heart, and I had a long letter about the great responsibility of the position and the rigid sense of duty he felt towards the University and the public. And the facial expression of the fellow examiner is not without importance, whether sympathetic, neutral, or antagonistic. One co-examiner always had a sardonic expression, a sort of Arian grin, plainly saying, "Well, you are a hopeless idiot!" The examination room may have the atmosphere of a cold storage chamber, and a student knows at once the type of man with whom he has to deal.

At the other extremity is the invertebrate examiner, so soft and slushy that he has not the heart to reject a man. It is a variety not often met with in this country, but it exists. Sympathy with the student and a strong feeling for his position may completely overmaster the sense of duty to the university and to the public. A former colleague was made unhappy for days if he had to reject a candidate. For some years I sat on an examination board with an elderly professor, a man of great force of character and ability, who never gave a candidate less than 80 per cent. of the possible marks. In the case of the most hopeless duffers with 20, 30, or 40 per cent. in other subjects he would call out "pass." He was a great grief to me, as well as a mystery. At the last meeting which he attended as an examiner he tossed his book to me with a malicious smile. There was 116 candidates, not one of whom he had rejected, and not one of whom had less than 80 per cent.

Between the metallic and the molluscoid is the large group of sensible examiners who try to put the candidate at his ease and to find out what he knows in a simple, sympathetic manner. But in any case the examiner is apt to take an unfair advantage of his position, and quite unconsciously. A specialist to whom the facts of his subject have become familiar and ingrained is apt to forget the years that have given the facility and the knowledge; and he may wonder when a man hesitates over an Argyll-Robertson pupil or mistakes a pericardial rub for an aortic insufficiency murmur. The most grievous mistake of the examiner is to regard the candidate as his mental equal and to expect from him knowledge of the same quality as that which he possesses, ignoring his long years of study and the short years into which the student has had to cram the knowledge of a dozen subjects.

Examining is often a heart-breaking task, with little to relieve the monotony of the long-drawn papers. It is distressing to meet with abysmal ignorance of elementary facts, and to realise with sorrow how many more minds are constructed as sieves than as sponges. But there are compensations, and who is there among us who does not appreciate

Comte's statement that there were few more delightful experiences than the sweet and softened feeling when a young man's examination was thoroughly satisfactory? But it is much nicer to watch the gradual growth of a student's knowledge and to get it out retail day by day than to drag it out wholesale at set times. One thing is certain—the best we have should be devoted to our duties as examiners. Men should give their whole time to the business when at it. Much-engaged men should not be chosen, and to examine in the evening, after a hard day's work, is to handicap the candidates. We shall no doubt come to a time when professional examiners will be appointed by the General Medical Council to act as associates and assessors to the professors. That it is not a task lightly or inadvisedly undertaken the returns I have given indicate only too clearly. Not that we can lay at the doors of the examiners the responsibility for the lamentable state of affairs to which I have referred. No doubt there are unduly severe examinations, and there are examiners with hearts as hard as pieces of the nether millstone, but these are exceptions.

THE EXAMINEE AND HIS POSITION.

When quoting figures I purposely dealt chiefly with the results of the final examinations, and I am sure the feeling uppermost in your minds was one of sympathy with the hundreds of young men who, after five years of hard work, fail in ordinary tests, and this brings us to a brief consideration of the examinee and his position. In two respects he is an unfortunate victim. Of one I have already spoken—the enormous development in the subjects of the curriculum; and here, I am sure, lies his serious difficulty. It is the case of a quart measure and a pint pot. Intellectual dyspepsia from cramming is at the bottom of his trouble. It is like a diet of hot bread, which a man can stand at first, but, as Lowell says in the "Fable for Critics"

By gradual steps he

Is brought to death's door by a mental dyspepsy.

Another cause of the widespread rejections is defective preliminary education; but let me emphasise the fact that the percentages of rejections are nowhere higher than among the very best students—e.g., Cambridge men, among whom in some subjects more than 50 per cent. are rejected. I do not deny that much could be done to relieve the present stasis if all medical students began thoroughly trained in physics, chemistry, and biology. In this respect matters are improving year by year. And we should be more honest with the feeble ones, not fitted either by breeding or by pasture to pursue their studies, who should be asked early to withdraw. It is infinitely kinder to stop a man in his career than to allow him to struggle on painfully and submit to the humiliation of the half a dozen or more rejections.

The conclusion of the matter is, the student need more time for quiet study, fewer classes, fewer lectures, and, above all, the incubus of ex-

aminations should be lifted from his soul. To replace the Chinese by the Greek spirit would enable him to seek knowledge for itself, without a thought of the end, tested and taught day by day, the pupil and teacher working together on the same lines, only one a little ahead of the other. This is the ideal towards which we should move. The pity of it all is that we should have made an intolerable burden of the study of one of the most attractive of the professions, but the reform is in our own hands and should not be far off. A paragraph in an address of the late Dr. Stokes contains the pith of my remarks: "Let us emancipate the student, and give him time and opportunity for the cultivation of his mind, so that in his pupilage he shall not be a puppet in the hands of others, but rather a self-relying and reflecting being."--*The Lancet*, October 11, 1913.

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WHAT IS SCIENTIFIC MEDICINE?

JAMES KRAUSS, M. D.

In the August number of the Medical Times, Dr. Anthony Bassler, under the heading of "Therapeutic Pathies, Creeds and Sects, the Mushrooms of Scientific Medicine," puts a number of medical and quasi-medical subjects, some unquestionably scientific, others more or less questionable, together for condemnation. With the flourish of a Prospero, he waves aside such useful adjuvants of medicine and surgery as water, electricity, physical agencies and psychic suggestion. He makes no distinction between medical methods and medical adjuvants. He professes to have considered homœopathy and Hahnemann impartially, throws aside a medical method of such serious scientific nature as homeopathy and gives Hahnemann, who was a scholar, a medical investigator and thinker of the highest order, the name of charlatan. Dr. Bassler makes false allegations against a worthy body of physicians, whose work is an integral part of scientific medicine, and defines scientific medicine in a way that no scientific physician can countenance.

In taking issue with his contentions, I must point out, at the very outset, that the doctor's translations of Hahnemann's clear and forceful German are not only stilted but actually corrupt. Dr. Bassler makes Hahnemann say that "the cause of a disease" is "unrecognizable," when, in fact, in the introduction to the *Organon*, from which he quotes, and in paragraph 7, not to mention other paragraphs, of the *Organon* itself, which is the real issue of Dr. Bassler's argument, Hahnemann distinctly states that there are recognizable and unrecognizable causes of disease, and in the footnote to paragraph 7 he further adds that every sensible physician will, as a matter of course, remove recognizable causes. What Hahnemann said was that the hypothetic causes of disease, the imagined causes of disease, are unrecognizable.

"The true art of healing," says Hahnemann, "is that business of (intellectual) consideration which belongs to the higher (spheres of the) human mind, to the free (unfettered) power of reflective judgment, and to the power of understanding (which is capable of) choosing and deciding upon (good) reasons (that business which is) to bring * * * abnormal activity * * * back to the norm of health." The understanding chooses and decides upon reasons, as Hahnemann says, and not according to disease causes, imagined or non-imagined, as Dr. Bassler makes Hahnemann say.

Hahnemann never declared that his method of homœopathy was "Like cures like." Dr. Bassler, like many another before him, puts this general formula into Hahnemann's mouth and ignores the fact that the homœopathy of Hahnemann is a concrete method of therapeutics and not a general formula which, on the face of it, would admit anything under the sun to be brought into curative similarity with anything else under the sun. Hahnemann contended, in paragraphs 26 to 50, that, in practical medicine, it is effects and not things, and effects only of a certain kind, symptoms present or into curative similarity; that, if we wish to follow nature's method, we must cure disease through symptomsimilarity. The method of curing disease

through symptomsimilarity is homœopathy. Hahnemann's own words, in paragraph 50, are: "Heile durch Symptom-enanthe-lichkeit!" "Cure through symptomsimilarity" is not "Like cures like."

When Tyson, in his *Practice of Medicine* 1897, page 995, recommends the use of purgatives in the treatment of apoplexy, he admits that he is attempting to produce relief in the apoplectic state by intestinal elimination, that he is attempting to relieve a diseased part of the organism by affecting a healthy part, that (unless he is making use of mere empiricism, but this is out of the question, for he has generalized when making the recommendation of purgatives) he relies for relief on the medical method of *symptomdissimilarity*, on the rational knowledge that the pathognomic state of apoplexy is not in the intestines and that the pharmacomechanic state of purgation is *not* in the brain, that the pathologic facts of apoplexy and the pharmacologic facts of purgatives are dissimilar, different, and, therefore, are not to meet in the course of their action. When Musser, in *Here's System of Practical Therapeutics*, 1901, volume II, page 449, recommends the use of diuretics in the treatment of ascites, he admits that he is attempting to produce relief in the ascitic state by renal elimination, that he is attempting to relieve a diseased part of the organism by affecting a healthy part, that he relies for relief on the medical method of *symptomdissimilarity*, on the rational knowledge that the pathognomic state of ascites is *not* in the kidneys and that the pharmacomechanic state of diuresis is *not* in the peritoneal cavity, that the pathologic facts of ascites and the pharmacologic facts of diuretics are dissimilar, different, and, therefore, are not to meet in the course of their action. Nitkowski follows the same method of dissimilarity when, as given in *Hare's Practical Therapeutics*, 1902, page 965, he uses a diaphoretic in the treatment of catarrhal jaundice, for he works upon the knowledge that the pathognomic state of catarrhal jaundice is not in the skin and the pharmacomechanic state of diaphoresis is *not* in the liver or the duodenum; and everybody else who

attempts to relieve a disease condition by means of a drug that attacks a healthy portion of the body, follows the medical method of symptomdissimilarity, for he is employing drugs whose effects appear to have no direct relationship whatever to the phenomena that the disease presents and that he is attempting to allay.

When we use an antidote for poisoning, an antiseptic for sepsis, an anodyne for pain, an antispasmodic for spasm, a purgative for constipation, a diuretic for anuria, we admit that we are singling out a symptom or an imperative condition and are treating it directly as though it were either all of the patient's disease (which, of course, it is not) or as though it were the point where the vicious circle of disease may be best broken, that we are attempting to relieve a diseased part of the organism by counteracting it with a drug of opposite action, that we are relying for relief on the medical method of *symptomcontrariety*, on the rational knowledge that the pathognomic state of poisoning and the pharmacochemic effect of the antidote, the pathognomic state of sepsis and the pharmacochemic effect of the antiseptic, the pathognomic state of spasm and the pharmacochemic effect of the antispasmodic, the pathognomic state of constipation and the pharmacochemic effect of the purgative, the pathognomic state of anuria and the pharmacochemic effect of the diuretic are contrary, though they necessarily meet in the course of their action. Whenever we formulate an indication and attempt to counteract it with a remedy having an opposite effect, we follow the method of *symptomcontrariety*, for we are employing drugs for their opposite action, drugs whose effects are the very opposite of the disease phenomena we are attempting to remove or to relieve.

When we use a diuretic, like belladonna, digitalis or scilla, in a pathognomic state of polyuria; a cathartic, like aloes, mercury, rhubarb, senna, colocynth, podophyllum or croton oil, in a pathognomic state of diarrhoea; an emetic, like ipecac, apomorphine or tartar emetic, in a pathognomic state of vomiting;

a nerve stimulant, like nux vomica or ignatia, in a pathognomic state of convulsions, we admit that we are attempting to relieve a diseased part of the organism with a drug directly affecting the diseased part, that we are relying, for cure in curable diseases and for relief in otherwise incurable diseases, on the medical method of *symptomsimilarity*, on the rational knowledge that the pathognomic state of polyuria, and the pharmacodynamic effect of the diuretic belladonna, digitalis or scilla, the pathognomic state of diarrhoea and the pharmacodynamic effect of the cathartic aloes, mercury, rhubarb, senna, colocynth, podophyllum or croton oil, the pathognomic state of vomiting and the pharmacodynamic effect of the emetic ipecac, apomorphine or tartar emetic, the pathognomic state of convulsions and the pharmacodynamic effect of the nerve stimulant nux vomica or ignatia are similar and of necessity meet in the course of their action. Whenever we attempt to remove or to relieve disease conditions with a remedy having similar effects on the diseased part as the disease itself, we follow the medical method of *symptomsimilarity*, for we are employing drugs for their similar effects, drugs whose effects on the organism are similar to the symptoms, the disease effects or disease phenomena that we are attempting to remove or to relieve.

A scientific physician is a physician who knows and, with correct unbiased discrimination, applies the various scientific methods of therapeutics. A scientific physician is an impartial physician. Dr. Bassler says he is impartial. Is he really impartial when he places such an important scientific method as homeopathy, a scientific therapeutic method especially applicable in medically curable constitutional diseases, with fads and minor fads? Is he impartial in his presentation of the *Organon of the Art of Healing*? Is he correct in his statements on homeopathy and Hahnemann?

His quotation on "Our vital force" is wrong. Hahnemann clearly says, in paragraph 16 of his *Organon*, that "by noxious influences (which are operating) upon the healthy organism through hostile factors that disturb the harmonious process of life

from the external world, our vital force as an immaterial force cannot be laid hold of and affected *except* in an immaterial, dynamic manner; that is, through an immaterial, impalpable force; and, in paragraph 17, that "since * * * by the removal of the sensible signs and conditions of the disease, the fundamental internal alteration of the vital force, that is, the disease, is removed at the same time, there follows that the physician has only to remove all of the symptoms in order to remove * * * the diseased alteration of the vital force, * * * the disease itself." When Hahnemann calls the vital force "gestartig," dynamic, he means that it is not palpable, not material, that it must be conceived in terms of an impalpable, invisible, immaterial force. More than forty years after Hahnemann first published his *Organon*, Virchow established human pathology on the basis of the cell as a unit, a microscopic structure endowed with almost invisible, certainly impalpable, immaterial, certainly not grossly material, functions, cellular forces so minute that it was necessary for Ehrlich, about forty years after Virchow and nearly a hundred years after Hahnemann, to devise the lateral chain theory to explain how these forces may be supposed to be affected. No true scientist will declare that receptors, haptines, haptophores, etc., are anything but conceptions to explain the union of minuté chemical aggregates or simples with the minute protoplasmic structure of tissue cells, but men that call themselves scientific seem perfectly satisfied with Ehrlich's explanation as the explanation of a scientist while they insist that Hahnemann's explanation of disease as an alteration of the impalpable, invisible, immaterial vital force that may be impressed only by an impalpable, invisible, immaterial remedial force is not the explanation of a scientist.

Dr. Bassler quotes from paragraph 46, "as a ridiculous squib of like cures like," the statement of Hahnemann that "measles bears a strong resemblance to whooping cough in regard to fever and the character of the cough." Why does he not say that Hahnemann takes his information from Bosquillon, *Element de Médecine Pratique de M. Cullen traduits*, P. II. I. 3. Ch. 7,

that, in an epidemic of measles and whooping cough, many children, having recovered from measles, remained free from whooping cough? Would it spoil Dr. Bassler's argument if he showed that Hahnemann's "squib" was not a piece of firework thrown into the Organon without good authority? Hahnemann explains, in the same paragraph, that the reason why in the epidemic under question only some and not all of those having had the measles could remain free from whooping cough was that measles and whooping cough resemble each other only partially. Why, then, does Dr. Bassler ask: "Does having had whooping cough prevent the cough in measles?"

He contends that Hahnemann took advantage of nature but gave the credit for his cures to medicines. This contention is in line with the medical notions of our extreme nature worshippers, who profess to teach and to practice medicine but have no faith in medicine, for the likely reason that they do not know medicine. In scientific medicine, natural immunity belongs to the province of prophylaxis and not to the province of therapeutics. It ought to be plain to any medical man that if individual nature is to be given the credit for the medical cure of diseases she must be able to assert herself for health before the medication. If she does assert herself for health but cannot reach it without medication, the credit must go to the medication. If individual nature could always assert herself for health before medication, no medication would ever be needed, for there would be no disease, there would be only health, uninterrupted health.

Dr. Bassler contends that Hahnemann located "the real disease in the immaterial, spiritual vital force," which is correct; that "the corporeal changes," * * * "signs and symptoms" he recognized only as "products of the disease," which is also correct; that he classified diseases into "natural" and "drug" diseases, the natural diseases into "acute" and "chronic" diseases, the chronic diseases into "psora," "syphilis" and "sycosis," which is also correct; but Dr. Bassler is not correct when he says that "this is the whole"—or any—"system upon which homeopathy is built; where are all the other diseases, and where is the impor-

tance of the laboratory, which is establishing medicine on a scientific basis, not to speak of the whole field of surgery? The advance of medicine has proven without a shadow of doubt that the bases of homeopathy are myths." Any one who can read will find that, in paragraph 50, Hahnemann defines homeopathy as the medical method of symptomsimilarity, that in paragraph 70, he limits homeopathy to medically curable constitutional diseases; that, in paragraph 71, he defines the business of the physician as the knowledge of what is to be cured, what is to make the cure, and what is the most effective medical application for the cure, three necessary points of knowledge to the elucidation of which Hahnemann devotes all the rest of the *Organon*. Hahnemann's classification of disease was merely for purposes of explanation of illustration. Illustrations cannot take the place of the subject they illustrate. Illustrations do not make a system of medicine; nor does a classification of disease make a system of medicine; nor did Hahnemann's classification of disease into natural and artificial, acute and chronic diseases make a system of medicine. One needs only to read Hahnemann's work on Chronic Diseases to be impressed with the fact that more than thirty years before Pasteur discovered the first micro-organism known to inhabit the human body, the micrococcus ureae, Hahnemann was imbued with the overwhelming importance that infection occupies in the causation of disease. This may not prevent Dr. Bassler from reiterating that Hahnemann's knowledge of medicine was behind that of the years in which he wrote, but we are concerned with plain facts, not with acrimonious fancies. Hahnemann's idea was that disease becomes chronic because of an underlying, unremoved state of infection. Infection, non-venereal, which he called psora, and venereal, which he called syphilis and sycosis—at his time, neither chancroid nor gonorrhea were fully separated from syphilis—is the constantly recurring and reiterated thought throughout his work on chronic diseases. He traced the symptoms of chronic infections disorders with such unerring power of observation that even to-day his description will pass as the

best presentation extant of the many and varied subjective, and objective symptoms of the chronic exogenous and endogenous intoxication; but even so, this work of Hahnemann does not represent, and was not given to represent, a system of medicine. Homeopathy was not built on a system and does not represent a system. Homeopathy depends on the cognition of symptoms as disease effects and as drug effects. Hahnemann considered symptoms and signs as the substance of pathology. Symptoms and signs are also the substance of pharmacology. The basic pillars of homeopathy are pathology on one side and pharmacology on the other independent sciences for symptomsimilarity.

If Dr. Bassler had reviewed the *Organon* carefully he would have found that, in paragraphs 7, 77, 208, Hahnemann directed the removal of the disease cause when recognized; that, in the note to paragraph 67 and in the paragraphs 262, 263, he directed the institution of palliative, antipathic treatment for emergencies when there is discomfort and danger to life; that, in paragraphs 77, 150, 208, 262, 263, he directed the adjustment of hygienic elements to normal, physiologic, requirements; that, in paragraphs 215, 224, 225, 226, he directed the institution of psychic treatment for non-somatic mental and moral diseases; that, in paragraphs 13, 29, 186, he directed the institution of surgical treatment for primary local diseases; and that, in paragraph 186, etc., he directed the institution of curative, homeopathic treatment for constitutional diseases with or without secondary lesions; that, a hundred years ago, Hahnemann hardly differed in the circumscription of the use of the various physical, psychical, surgical and medicinal measures from the best scientific practice of our day. This completely disproves the contention that Hahnemann, in creating homeopathy, created a special system of medicine. In creating homeopathy, he created a therapeutic method, the method of symptomsimilarity, a specific permanent basic addition to the science and art of medicine. The foregoing facts further disprove the ill-natured contention of Dr. Bassler that "the homeopathic school * * * have accepted the standards of the old school, the laboratory, surgery, and other-

wise," and that "full grown men continue the masquerade nom de plume of homeopathy, and make commercial pabulum of it," for, if the homeopathic school is the school of Hahnemann, that school cannot be said to have accepted anew what it has never forfeited or relinquished, and men competent in the practice of homeopathy cannot be said to "continue the masquerade nom de plume of homeopathy, and make commercial pabulum of it," any more than men competent in the practice of surgery can be said to masquerade in surgery and "make commercial pabulum of it." The possession or the conviction of having a truth of great medical consequence does not disbar a physician from the possession of our acquiescence in other truths of great medical consequence. The fact that there is no school in existence, old school or homeopathic school or any other school, which teaches all that belongs to scientific medicine in an impartial, inclusive manner, may divide physicians into schools of medicine, but scientific medicine is not confined to school medicine. Scientific medicine is above all schools of medicine. Scientific medicine recognizes and represents all the truths of medicine, without distinction of school or source.

According to Dr. Bassler, the laboratory is establishing medicine on a scientific basis. With him the laboratory is a modern institution. The fact is that the laboratory is as old as the clinic. The laboratory is the workshop of the clinic and has been used for experimental discovery and experimental proof ever since medical men have performed experiments, have examined parts of clinical wholes as parts of clinical wholes. Hahnemann was a laboratory worker. His work was strictly experimental work. Hahnemann experimented on his own body, while Morgagni worked in the dead house. Bichat in the anatomic room, and Virchow, Pasteur and Koch were yet to come. While Auenbrugger and Laennec put into our hands methods and tools of precision for the observation of disease, Hahnemann put into our hands methods and tools of precision for the treatment of disease. The laboratory does not deal with the patient as a unit, but deals with parts and products of patients as units. What

is true of a part is not necessarily true of a whole. For science, the human mind must perceive and associate identical factors with identical factors, wholes with wholes and parts with parts. The laboratory cannot, of itself, establish medicine on a scientific basis, and, what is more, is not, in spite of Dr. Bassler's assertion, "establishing medicine on a scientific basis." For scientific medicine, dealing as it does with medical and surgical phenomena through observation, experimentation and reasoning, reasoning by induction for generalization and reasoning by deduction for verification or proof, mere laboratory experimentation is insufficient. Observation of facts and association of facts, perception and ratiocination, enter into the making of science, and observation and association of medical and surgical facts enter into the making of scientific medicine.

Scientific medicine is too big to depend for its establishment on the laboratory, on factitious experimental observation alone. Observation outside the laboratory will also have something to do with "establishing medicine on a scientific basis," and rational methods rather than the guesswork and groping of empiricism will have to play their part in scientific medicine. I confess I cannot tell what "regular medicine" is, of which Dr. Bassler speaks. Scientific men acknowledge only one kind of medicine and that is medicine which gives correctness, certainty, completeness for medical and surgical practice. To obtain genuine correctness, certainty, completeness in the practice of medicine and surgery we must know all the methods of medicine and surgery, we must know their indications and their limitations, we must know what we can do and what we cannot do, we must acknowledge and assimilate the truths of medicine and surgery.

When scientific medicine will emerge from the present chaos and will be established, we shall find, I believe, that water, electricity and other physical agencies as well as psychic suggestions, will remain useful adjuvants in medical and surgical practice; that professors of clinical medicine will distinguish between temporizing medical adjuvants and permanent medical

methods; that the serious scientific nature of homeopathy as the medical method of symptomsimilarity will be recognized, taught and practiced everywhere; that Hahnemann, and no other single medical personage, will be acknowledged to have ushered in the modern era of scientific medicine, for scientific medicine has pathology as its preliminary only and therapeutics as its ultimate, and it was Hahnemann, and no other medical personage, who made it possible to diagnose drug remedies as well as diseases by their manifestations in the human body, who gave the practice of medicine such a degree of certainty, precision and completeness as was not known before his time.

It ought to be a matter of great satisfaction to know that the American Association of Clinical Research is hastening the day when medicine will be scientific medicine and medical men will be scientific men, sufficiently instructed to recognize and broad enough to acknowledge all the truths of medicine.—*The Medical Times*, November, 1913.

ON HEALTH, FATIGUE, AND REPOSE.

BEING EXTRACTS FROM THE LADY PRIESTLEY MEMORIAL

LECTURE DELIVERED BEFORE THE NATIONAL

HEALTH SOCIETY.

BY WILLIAM STIRLING, M.D.,

BRACKENBURY PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY
OF MANCHESTER.

Lord Beaconsfield in one of his many luminous utterances declared that the great social question which should engage the attention of statesmen is the health of the people. The health of the people is the wealth of the nation, and Huxley, in one of his letters to John Morley, wrote that "The great thing to work for, as time goes on, is vigour as one lives," that is to say "health," which is just another way of saying "fitness" for the duties that lie before us. With Sir Philip Sidney we may say: "Th' ingredients of health and long life are great temperance, open air, easy labour, little care."

In health the machinery does not chafe in the working—all goes on silently, smoothly, and without noise, while there is complete adaptation to the environment. * The one part of the body cannot say to the other, I have no need of thee. Organs, however insignificant they may seem, may prove to be of paramount importance in the economy, as has been proved by the recent discoveries regarding the functions of such little-known and apparently unimportant organs as the pituitary body, the pineal, thyroid, and thymus glands, not to mention others whose functions and history we are just beginning to discover.

Most of the breakdowns in a man's life, however, are due to the driver himself, either because of ignorance or recklessness, or both. "We do those things we ought not to do, and we leave undone the things which we ought to have done," and then we wonder "that there is no health in us."

Our forefathers used the word "health," woth or wholeness, to indicate soundness not only of their bodies, but also of their implements and utensils used for hunting, for cooking, and for weapons of war and the chase. The highest perfection is a "sound mind in a sound body." "Life without health is a burden, with health it is joy and gladness."

Fatigue is the result of over-action, and above all sustained and continuous action of an organism as a whole, or of one or more of its organs. Not only is the over-worked organ itself effected, but owing to the chemical or metabolic changes underlying all sustained strenuous endeavour and action—without sufficient periods of rest or repose—other organs and parts of the body are speedily implicated. In fact, as pointed out by F.S. Lee, fatigue is a universal biologic phenomenon, while the activity of living substance tends to inhibit or restrain further activity.

MUSCULAR FATIGUE.

In muscular fatigue the chemical preserves upon which our movements depend are gradually used up; the greater the effort the greater the metabolism and consequent expenditure. In

addition, however, poisonous by-products, more especially carbonic acid and lactic acid and acid potassium phosphate, are formed. These products are not removed with sufficient rapidity, and remain to clog the machine, and indeed act as toxins. These fatigue products not only poison the organ in which they are formed, but they pass into the blood and are conveyed by it to other parts of the body, and poison them also, before they are destroyed or excreted.

The study of fatigue, therefore, is largely a study of chemical metabolism. When the muscles are in action normally their activity depends in part on the supply of substances allied to the sugars. In overworked muscles protein bodies are also broken up. The result is the overformation and imperfect removal of the "fatigue products" or body toxins which have a powerful depressant action. Overwork without sufficient repair of an organ, be it brain or eye, the digestive organs or muscles, is the primary cause of fatigue. The symptoms and signs, therefore, will be as varied as the organs themselves.

All the organs of the body cannot run at full speed at the same time. Severely bodily exercise is incompatible with full digestive activity. "After dinner rest awhile" is part of the proverbial wisdom of Salerno. Mental fatigue greatly impairs bodily activity, and physical or muscular fatigue has a distinct effect on brain activity. Every organ in activity requires a larger supply of blood—its blood vessels dilate—and there is not enough blood to give all organs an extra supply at the same time. It was never so intended in the scheme of Nature, though some people seem to act as if it were so, and they reap the disastrous consequences. Not only the amount of blood but the quality of the blood is of importance.

Muscles tire very quickly when they are under tension. With what a sense of relief does the trained soldier on occasion welcome the command "Stand at ease!" It is easier to walk and keep moving than to stand still in one position. The continuous strain of standing is only too well known to teachers, to shop girls and shop men. Something has been done recently to

ameliorate the condition of shop life by the provision of seats for resting when occasion affords.

There is a limit to a man's working power, both physical and mental, varying with the individual. Weber long ago showed that in order to obtain the greatest amount of mechanical work from a muscle, the weight the muscle had to lift must not be too great. So it is with the working hours of the working man. Long hours do not necessarily mean more work or better work.

Overwork or any unwonted physical exertion gives rise to a sense of weariness or tiredness which indicates a lessened capacity for exertion both of body and mind. Fatigue, therefore, has a double aspect—first, a sensation of tiredness more or less definite in character, and, secondly, a decrease in the power of exertion, so that one cannot go on with the effort or can do so only after powerful excitement or stimulation. A diminution or slowing down of the muscular power represents the physical or objective side, and the sensations of fatigue the psychical or sensory side.

GYMNAST'S FEVER AND THE IMPORTANCE OF OXYGEN.

After a long day's walk, more especially to one unused to it, not only are the legs tired, but one feels "sore all over," in the arms and trunk alike, though these parts have participated relatively little in the actual expenditure of energy. The enormous strain of what is called "forced marching" is well known amongst soldiers. Ergographic tracings prove convincingly how severe is the strain and drain on the soldier's physical resources and also the prolonged effect in his output of mechanical work. The too ardent untrained Alpine climber, the enthusiastic unseasoned gymnast, may at night have marked symptoms, of fever, due to the action of the poisonous toxins produced in his own body, and it is some time before their effects pass off. The best remedy is sleep. So marked are the effects of the toxin that this post-athletic febrile attack has been called "gymnast's fever."

It would not serve any good purpose to discuss here the means by which physiologists have analysed the seat of fatigue in a

nerve-muscle preparation or the relation between what is called the "refractory period" and fatigue. The gist of study of the refractory period of the heart and other organs is thus expressed by Verworn: "In all living substances, directly following an excitation, there must exist a period in which its irritability is reduced." The important observations of Dr. Leonard Hill on the effects of a liberal supply of oxygen in fatigue are most important, while Verworn goes so far as to say, "Fatigue is invariably asphyxiation."

FATIGUE OF ORGANS OF SENSE.

Medical men are constantly warning the public, and pointing out to teachers of youth, the disastrous effects of eye-strain. Tea-tasters know well how rapidly the sense of taste—the palate, so-called—becomes fatigued. We all know how soon our sense of smell is paralysed. It is partly for this reason that persons breathing an almost putrid atmosphere fail to detect what is painfully unpleasant to any one entering such a room from the fresh air outside. For the same reason one has to stuff a rose in order to smell its perfume.

The sense of hearing under certain conditions is no exception. The dull dreary drip of a long and uninteresting lecture, or a monotonous discourse delivered in, it may be, an atmosphere not too hygienic, soon has its effect on the audience. The hearing centre of the brain through the ear is soon lulled to inactivity, a condition which speedily affects neighbouring regions of the brain. The combined result is somnolence, and it may be sleep. Then a sudden loss of control and relaxation of the muscles of the back of the neck, and the senseless head nods. When chin meets chest the sleeper awakes in a state of semisomnolent surprise. In this case there is weariness and lassitude rather than fatigue in the true sense of the word. To what extent the loss of tone of one's muscles and the occasional somnolence in certain churches—and, it may be, in chapels—is due to the poisonous nature of the atmosphere I am not prepared to say. Perhaps there are other factors. Somnolence is not in all cases to be attributed to the sermon, but rather to the badly ventilated

atmosphere. Although Sunday is officially the first day of the week, to most churchgoers it is the close of the week, a factor not without significance in the explanation of the phenomenon.

PLEASURES AND EMOTIONS.

It is the same with over-driven pleasures, and also with intense emotions, as may be seen in the beautiful picture of St. Catherine by Sodoma in the church of San Domenico in Siena. We say pleasures pall. It is that their evanescent character necessitates frequent repetition, and hence they soon pall.

ATTENTION AND MEMORY.

Darwin considered attention one of the most important of the human faculties for the development of the human understanding. With it must be associated memory, which depends on the disposition of our nerve cells to retain impressions made on them, and to reproduce them when required. Over-exertion of the brain necessitates prolonged rest; sleep, and something more, is required to restore mental activity. Observant teachers in our large public schools know full well that if there be excessive mental work, the effects cannot be immediately compensated by prolonged sleep—the remedy lies in diminishing the work, and in giving more time for recreation. Insufficient sleep from any cause in children practically amounts to overwork—a condition that diminishes the resistance to disease.

In fatigue of the brain one is conscious of a diminished mental grasp of a subject, and that an increased effort is necessary for mental work. There is also diminished capacity for attention, marked impairment of memory, and great difficulty in concentration of thought. To these may be added restlessness and irritability, and impairment of the sense of touch, and also diminished muscular power, although the muscles of the body may have been practically quiescent during the whole period of the overwork. The facial expression may also be altered.

FATIGUE IN SCHOOL LIFE.

The effort of attention is the expression of a state of tension of the nerve cells of the brain. The act of attention is most tiring when a voluntary effort is made. Attention is correlated

with expenditure of energy by the particular nerve cells affected. It is, therefore, extremely important that teachers should recognize how exhausting sustained attention is, especially in young children. The brain and the organs of sense soon become fatigued, and require frequent intervals for repose if the receptivity of the nerve cells is to be maintained. Not only is fatigue fatal to attention but, according to Ribot, it is equally fatal to memory. "The impressions received under such conditions are not fixed, and the reproduction of them is very laborious and often impossible. Fatigue is regarded as a stage wherein, owing to the normal acting of an organ, the nutrition suffers and halts. When the normal conditions are restored memory comes back again."

Lombard has shown that the energy of nerve cells and muscles exhibit rhythmical variations in the course of the day. Both nerve cells and muscles are most energetic between 10 and 11 A. M. Therefore these periods should be selected for the lesson that is apt to cause most brain fatigue. The Germans have a proverb, "The morning hours have gold in the mouth." In schools much can also be done by changing the subject of study and so arranging the daily lessons that a subject like mathematics, which causes brain fatigue, should be followed by one of quite a different nature, such as drawing. Drawing and writing, which are apt to cause eye strain, should not follow each other.

Many methods have been used to measure fatigue. One of the indirect methods is by means of the aesthesiometer, an instrument for determining the spatial sensibility of the skin, which is diminished in fatigue. The reaction time method measures the time taken to react to a given signal, which becomes longer in fatigue. Others have employed dictation or arithmetical calculations or counting letters—that is, certain letters are struck out from a page of print. In fatigue the number struck out diminishes; others, again, employ memorizing.

It is well known that certain school subjects produce fatigue sooner than others. It has been attempted to obtain fatigue

coefficients by means of the aesthesiometer (Wagner), and by the dynamometer. The following represents the order of subjects arranged according to difficulty :

Mathematics (standard)	...	...	...	100
Latin	...	...	...	91
Greek	...	...	...	90
Gymnastics	...	...	...	90
History and Geography	...	...	...	85
French and German	...	...	...	82
Natural history	...	...	...	80
Drawing and religion	...	...	...	77

There is much to be said against home lessons, more especially when the conditions in many homes in which the young scholar has to work in the evening are remembered.

FATIGUE IN RELATION TO DIGESTION AND THE KIDNEYS.

Let us enlarge our view of fatigue a little, and take a wider and withal practical application of the subject. What does the question of "quick lunch" mean in this age of hurry and worry? It means over stimulation of the digestive glands. Recent investigations have shown how intimately the quality of certain of the digestive fluids depend on the condition of the nervous system. The business man who has a quick lunch day after day wonders why he feels dyspeptic. He calls it indigestion, and flatters his soul that he has a touch of "liver," and that all will soon be well. Yes, so it would—if he would but act rationally. Glands, like muscles, suffer from fatigue. Even the tear glands of some lachrymose individuals require a rest.

The kidneys are, perhaps, the best-abused organs in the body. Some people stimulate them to activity morning, noon, and night—fatigue them in fact. The kidneys are excited to activity chiefly by the chemical substances present in the blood, and the duty devolves upon them of excreting the waste products resulting from an unnecessarily large intake of nitrogenous food, a habit all too common.

RHYTHM.

Bichat, at the beginning of the last century, spoke of the "tripod of life":

Brain.

Heart.

Lungs.

Respiration or breathing is a more fundamental function than the circulation of the blood. All animals breathe, but not all animals have blood or a heart. The beating of the heart goes on before birth, and the cessation of its beat marks the cessation of life itself. How it is the body—a harp of thousand strings—keeps in tune so long? The secret is to be found in rhythm. Heart and diaphragm beat and contract rhythmically, and after each beat there comes a pause which permits of restitution of matter and energy, and gives time for the waste products to be removed, and thus leaves both muscles recuperated to begin a new beat. The heart rests, or is not in action, three-fourths of its time; the act of expiration is chiefly due to mechanical causes; inspiration is chiefly a muscular act. We must acknowledge the necessity as well as the universality of rhythm. What is sleep but the quiescent period of our nerve cells? It is more, for we say, with Macbeth, that it is chief nourisher in life's feast. The nerve cells, though resting, are storing up matter, and are being flushed and cleaned. Some folks indulge in what they are pleased to call a "spring cleaning." Well, our brain cells should have what corresponds to a spring cleaning every twenty-four hours.

CAUSES OF FATIGUE.

As to the causes of fatigue, the idea that the chemical substance in the muscle or in the blood (which are the sources of the chemical and thermal energy) are used up more rapidly than they are replaced is substantially true. That muscular fatigue is part of a chemical process is shown by the fact that if an extract made from the muscles of an animal that has been fatigued be injected into the muscles of a fresh animal, they

show phenomena which cannot be distinguished from those of fatigue.

Professor A. Mosso showed that the blood of a fatigued animal contains toxic or poisonous substances. If the blood of a fatigued dog be injected into the blood vessels of a fresh, untired dog, the latter shows the symptoms of fatigue and changes in the heart-beat and breathing like those of fatigue.

If the blood vessels of a fatigued muscle be washed with oxygenated water containing a little common salt—the waste products are removed. Nothing, that can yield energy to the muscles is added, yet the muscle regains its activity. Professor Kronecker showed experimentally that when a tired muscle is massaged to squeeze out the waste products it regains its activity. Massage was long ago practised by the Hindus, and the gladiators of ancient Rome had their muscles rubbed after the contests; poisonous substances were thus quickly got rid of. Galen himself in the early part of his career was physician to the gladiators of his time.

Putting it broadly, then, the problem has a threefold aspect:

1. Using up of matter and energy. Restitution does not keep pace with waste. There is a run on capital.

2. Clogging of the machinery by the products of its own making, and the transference of these products by the blood to affect injuriously other organs.

3. The lack of oxygen. Thus both local and general effects must be studied. If fatigue be even in small part due to poisoning of the body, is it not obvious that from the employer's point of view he ought to strive to place his employee under the best conditions as to ventilation and other hygienic measures? In every case where this has been done both employers and workmen have been gainers. In Manchester in 1892 the firm of Mather and Platt adopted a forty-eight hours week. Sir William Mather, in commenting on the result, expressed the view that the most economical production is obtained by employing men only so long as they are at their best. When this stage is passed, there is no true economy in their continued work.

REPOSE.

All this makes it plain why repose is the necessary complement of fatigue. The idea conveyed by the word "repose" is to put things back in their places. I stand by the Jewish code, one day's rest in seven. By repose and restfulness I do not mean that as set forth by Tennyson in the choric song of the "mild-eyed melancholy" lotus eaters; rather would I put it in the words of Plutarch:

Rest in the sweet sauce of labour.

In addition to sleep—if it can be obtained naturally—the true rest of many a brain is to change to something less exciting, but at the same time useful occupation in which the sufferer gets interested. For many, something approaching manual labour in the open air is best. Not only is change of occupation important and beneficial, but change of scene also. What has been called the "magic of change" is more potent for good than any panaceas of the alchemists. Change is the very essence of life, for all manifestation of life is due to change—incessant and varying in degree—in the cells that compose our bodies.

For this of old is sure,

That change of toil is toil's sufficient cure.

The British Medical Journal, December 6, 1913.

EDITOR'S NOTES.

Ozone.

For some years ozone has enjoyed a popular reputation as an air purifier and as a germ killer. As a consequence many ozone generators have been exploited for commercial purposes and great claims have been made for their therapeutic and bactericidal value. Evidently these claims should be substantiated or else exploded.

In the *Journal of the American Medical Association* for September 27, 1913, appear two articles dealing with the value of ozone as a purifier and disinfectant. The first, by E. O. Jordan, Ph D. and A. J. Carlson, Ph. D., of Chicago, gives the details of experiments made, and the results attained. Briefly, (1) Ozone did not kill bacteria, except a few forms, in ozone concentrations that could not be tolerated by man. It is less effective as a disinfectant than formaldehyd gas. (2) In concentration strong enough to kill germs ozone could not be tolerated by the human organism. That should explode the theory of its value in respiratory diseases. It causes headache and has an irritating and corrosive action on mucous membranes. (3) Ozone was found to mask certain unpleasant odors. But the authors remark, "Ozone does not make 'pure air' any more than strong spices make pure food." The disagreeable odors are masked because ozone seems to have an anesthetic effect on the olfactory epithelium.

The second article was written by W. A. Sawyer, M.D., Helen L. Beckwith, B.L., and Esther M. Skelfield, A.B., of the laboratory of the California State Board of Health. Experiments were conducted by them at the request of agents for ozone generators because the manufacturer's claims were questioned.

The conclusions reached in California were the same as those in Chicago. 1 The gaseous products of the two well-known ozone machines examined are irritating to the respiratory tract and, in considerable concentration, they will produce edema of the lungs and death in guinea-pigs. 2 A concentration of the gaseous products sufficiently high to kill typhoid bacilli, staphylococci and streptococci, dried on glass rods, in the course of several hours, will kill guinea-pigs in a shorter time. Therefore these products have no value as bactericides in breathable air. 3. Because the products of the ozone

machines are irritating to the mucous membranes and are probably injurious in other ways, the machines should not be allowed in schools, offices or other places in which people remain for considerable periods of time. 4. The ozone machines produce gases which mask disagreeable odors of moderate strength. In this way the machines can conceal faults in ventilation while not correcting them. Because the ozone machine covers unhygienic conditions in the air and at the same time produces new injurious substances, it cannot properly be classed as a hygienic device.—*The North American Journal of Homœopathy*, November, 1913,

Treatment of Small-Pox by Tincture of Iodine.

Pedley writes in the *Indian Medical Gazette* for November, 1912, on this topic.

While seldom having the chance of treating a case of small-pox, Pedley had been on the lookout for an opportunity of using Iodine, for he felt that its penetration of the thin covering of the vesicles would have the effect of destroying the activity of micro-organisms contained in their lymph.

On the first appearance of the spots he painted them wherever they occurred with equal parts of tincture and liniment of Iodine. After three days he changed this to the tincture alone, using it twice a day. The rash was profuse on the face, chest, arms and hands. The patient found the application of the tincture cooling and grateful, and asked for it to be repeated. It was kept up for six days. The result was remarkable. There was no itching, no discomfort and no secondary fever whatever; the vesicle collapsed and shriveled; the cuticle peeling off left a clean, white surface, quite free from marks or scars.

While he believes that the course and severity of small-pox may be much modified by keeping down the fever by the thorough and continuous use of cold water, he feels sure that in the application of the tincture of Iodine we have a most valuable remedy.—*The Medical Advance*, November, 1913.

The Iodine Content of fish Thyroids.

The observation that a fish diet increased the iodine content of a dog's thyroid was made some time ago. The constant presence of iodine in sea water has suggested that the thyroid of salt-water fishes might contain a relatively large amount of iodine. If iodine is present in sea water as suggested by Gautier in organic combination it is probable that the iodo-organic compound is capable of assimilation and transmission. It now appears from an interesting note upon this subject by Mr. Alexander T. Cameron, published in the October number of the *Biochemical Journal*, that definite evidence has been obtained that unusually large amounts of iodine are constantly present in some species, a finding which lends some support to the view that the iodine content of the thyroid is a function of iodine in the diet. In the specimens of fishes selected for analysis the thyroid of the *raia clavata* was found to contain amounts which were not extraordinary compared with that found in the thyroid of the mammals, but the thyroid of *scyllum canicula* contained more, and in one case much more, iodine than any thyroid previously reported upon. Thus, accepting the following figures for the dog as 0.692 per cent. on dried gland, 0.588 per cent. for the human gland, 0.531 per cent. for the gland of the pig, 0.53 per cent. for the gland of the sheep, and 0.477 for the gland of the ox, the fish thyroid referred to contained as much as 1.160 per cent. of iodine. This is, of course, a very remarkable amount, and further investigations in this direction will be looked forward to with interest. The research, so far, suggests that fish thyroid would be a valuable therapeutic agent, and would appear to add strength to the view that the iodine value of the diet plays a considerable rôle in determining that of the gland.—The *Lancet*, November 8, 1913.

The Importance of Recognizing the Value of High Blood-Pressure.

In less than twelve years the estimation of the blood-pressure has come to be resorted to with even greater frequency than the estimation of the body temperature by means of the clinical thermometer. We have learned that in many instances a high blood-pressure is not to be considered as abnormal in the sense of an evil, but rather as a means devised by nature for the maintenance of an active circulations in the face of arterio-capillary fibrosis and spasm. A high blood-pressure is usually as necessary, in such instances, for the maintenance of an approximately normal existence, as cardiac

hypertrophy is essential if life is to be maintained in the presence of chronic valvular disease. A high pressure is essential in order that the blood may pass with reasonable freedom and quantity to the tissues which require it, even though the blood paths are tortuous, unyielding and narrow. In the presence of disease the so-called normal standards are sometimes to be ignored. Attempts to reduce the pressure consequently often result in feebleness, dyspnea, lack of initiative and general wretchedness. We are thus coming to recognize more and more that nature often knows what is best for the patient, and the physician should not meddle with nature's methods until he has good reasons for believing that they have become injurious, or, if we may use such a term, unwise.—*The Medical Times*, December, 1913.

. The Dietetic Treatment of Oxyurides.

L. Revilliod (*Rev. med. de la Suisse rom.*, April 20th, 1913) claims that the persistence of oxyurides in certain individuals in spite of repeated courses of vermifuges and enemata can be explained only by predisposition. If a single pair escape destruction, or if some of the numerous ova remain behind, the condition of the patient is soon as bad as ever. Other individual, though exposed to infection, never harbour the parasite—that is, are immune. Treatment which neglects to increase the resistance of the individual is thus irrational. A case reported by Stettiner indicates the lines on which a rational treatment is possible. A man, who had long had oxyurides, developed diabetes. The usual antidiabetic diet was prescribed, and the oxyurides disappeared. Stettiner concluded that oxyurides and their ova require a soil rich in hydrocarbons. He then treated five other cases of oxyurides by diet. Four completely recovered, and, in the one which proved refractory, the diet was not strictly adhered to. The writer recently saw a man, aged 50, who in spite of treatment by numerous physicians, had harboured oxyurides all his life. In other respects he was healthy. No other person of his household was affected in this way. In July, 1912, he was placed on an antidiabetic diet. The parasites soon disappeared, and in March, 1913, the cure persisted in spite of the dietetic measures having been relaxed. The urine in this case did not contain sugar, but the fact that oxyurides thrive in the intestine indicated an excess of hydrocarbons. These observations explain why oxyurides are commonest in children who are fed on pap.—*The British Medical Journal*, November 15, 1913.

Mercuric Chloride Tablets.

Proper steps must be taken to minimize as much as possible the danger of inadvertent administration of bichloride tablet. There has been a great increase in the number of deaths from bichloride of late. There is no real need for the popular use of these tablets at all, but the public will use them either with or without the advice of the physician. Whether right or wrong, a condition and not a theory confronts us. These tablets should be made in distinctive form, say triangular, be colored red or blue, have quinine or cresol or pyridine incorporated to arrest the taker's notice through the senses of taste and smell, and be wrapped in green paper separately, upon which the word "poison" should be printed, or a skull and bones. They should be dispensed only in glass containers with a rough exterior. The printing should be in white letters. Since the tablets are used in small quantities only the added cost would be of no great consequence. While no such precautions would prevent suicide they would be effective in preventing inadvertent poisoning.—The *Medical Times*, December, 1913.

The Quantitative Estimation of Free HCl in the Stomach.

Quantitative estimation of the free HCl in the stomach, as is well known, is peculiarly difficult, since organic acids and acid salts may also be present, and a certain amount of HCl may be combined loosely with the proteins present, so that methods that are too delicate give an excessive proportion, or if they exclusively reckon the free HCl, give too low an estimate. Fittipaldi (*Gazz. degli Osped.*, March 6th, 1913), having tried the methods of Topfer, Fischer, and Gunzberg, advises another test—namely, tropaeolin, used titulometrically. His experience with the tropaeolin method is satisfactory, both as a control or as a substitute for the Gunzberg (phloroglucin-vanillin reaction) reaction. It may be used under artificial light, and is easily managed. The author thinks the dimethyl-amido-nitrobenzol reaction is so unreliable (chiefly owing to the presence of lactic acid) that it should be abandoned. In using the tropaeolin method the porcelain dish should be slightly warmed.—The *British Medical Journal*, November 22, 1913.

Gleanings from Contemporary Literature.

ADOLESCENCE.

By VINCENT GREEN, M.D. Edin.

Assitant Surgeon for Diseases of the Throat and Ear, London Homœopathic Hospital, President of the British Homœopathic Society.

In choosing adolescence for the subject of my address I was attracted by the fact that although it is that period of life when the future man and woman are made or married by external influence and environment, it is the one period both in health and disease that medical authors are most silent about. Pædiatrics leaves the child severely alone after 8 or 9, whilst works on general medicine deal with sentence; the menopausal period, too, has its abundant literature. But with the study of eugenics the importance of the adolescent period of life, both in health and disease, is being realized, and the gap in the literature of the subject is being rapidly filled up.

The adolescent stage of life extends from the commencement of puberty to 17 or a little later, when it merges into adult life. My aim is to make a brief survey of the subject as much from the educational as the purely medical point of view, and I may here express my great indebtedness to Hall's work on the subject in the preparation of these notes. The most characteristic feature of adolescence is growth. The most rapid growth in height takes place between 14 and 15, and the curve of increase in weight closely follows, though always a little behind. In this acceleration girls precede boys by a year or two. From 13 to 15 girls are taller and heavier, but after 15 they are passed in both respects by boys, who continue to increase up to the age of 20, whereas the girl comes practically to a standstill at 17. Height and weight are the truest expression of energy or momentum of growth, and are the best index of health, so long as symmetry and proportion are preserved. Lack of this latter by itself constitutes ill-health, and we find insurance companies discriminating against tall and slender people. It should be the aim of hygienic and body training to prevent tallness and slenderness, and to win back, the correct proportions between breadth and height. Besides being affected by racial characteristics growth is very much influenced by environment, for although growth is held to be one of the most characteristic expressions of heredity the impulse causing it is exceedingly plastic to external influences. The child bred in the country, living in the plains, and in a warm climate, is most suitably circumstanced for stature. One observer found that children born in summer are taller on the average than those born in the winter. This corresponds with the dog fanciers' experience of winter litters. The rate of growth during adolescence varies. Here, as with most of the other phenomena of adolescence,

periodicity and rhythm are the keynote. Investigators have shown that when the height is increasing most rapidly the thickness is increasing most slowly, and *vice versa*, so that weight and height may act as a leverage to the increase of one another; for example, bone lengthening tenses the muscles, thus stimulating them to grow and restore the equilibrium. As to whether the utmost possible growth is to be desired is a moot point. Dr. Porter, from an examination of a large number of children, came to the conclusion that larger children are intellectually superior to small ones; and it is a common experience to find a dominating personality in a big tenement. Everything depends on keeping the balance between structure and function, body and mind, height and weight. The advance must be all along the line. The man of genius with perverted morals, and the acromegalic are examples of a lost equilibrium which has resulted in the permanent detriment of the individual. There is a very close relationship between the physique and mental powers, so much so that within physiological limits training of the one will react favourably on the growth and development of the other. We must not rely on heredity alone. We want all our heredity entitles us to and a little extra for progress. It has been suggested that the pre-adolescent stage of growth represents what we have in common with the animals; whilst the adolescent stage raises us above them and makes us more distinctly human. As contrasted with the effect of improving the physique, hard conditions, so often the lot of the lower classes, lead to early sexual maturity, whereas the comparative comfort and ease enjoyed by educated classes diminish the reproductive powers. This is not altogether to the interest of the nation, but it is quite futile to fulminate against it in both classes as pure selfishness, as so many are doing to-day.

Having considered some of the factors which affect growth in height and weight, reference may be made to the retardation of growth which is noticeable just before the sudden outburst of puberty in the teens. An interesting query would be why do girls precede boys in the period of greatest increase? An answer might be found in natural selection at the dawn of man's evolution, when it was to the woman's interest for her to be sexually complete and physically developed before her mate. The characteristic pre-adolescent retardation of growth in both sexes possibly stands for a husbanding of resources by Nature for the big effort she makes a little later. During this retardation period there is great stability, mental and physical. The young child grows despite great hardships; as contrasted with this during the period of maximal growth in adolescence there is marked instability, mental and physical. As a consequence the individual is more easily affected by environment; if unfavourable, the forward progress toward maturity may be arrested, the liability to reversion, and to variation in growth destroying the normal rhythm, increased; and there is a predisposition to sickness which increases in the later stages of adolescence. The young adolescent at 17 to 18 is as limp and inept as a moth just burst from its chrysalis, and needs more than at any other

time in life care and protection physically, intellectually and morally. Whereas boys of ten often lead, so far as their troublesome, interfering elders will allow them, independent lives, which with their lack of sentiment, love of fighting, truancy, &c., are very suggestive of their savage ancestry, the young adolescent is very susceptible to adult influence. New traits, powers, faculties have arisen, in some cases replacing the ancestral prepotencies. There is an insecure equilibrium and an incomplete co-ordination, and a lack of ability to adjust him or herself to environment.

Considering how little attention has been devoted to this problem in the past as compared with the present, how little it has been realized that during adolescence external influences have the greatest power in producing characteristics which become hereditary, we should be very optimistic as to the future. If the profession can be made to take up the question of education from the medical standpoint and stand up to the too often overzealous pedagogue, by careful moulding of the plastic adolescent through successive generations, the superman should be evolved; but for this, a great work has to be done by our profession, for there is a risk today of the hands of the clock being put back by the educationalists.

Apart from general growth, if we study the growth of the individual organs we find that they do not grow in equal proportion. Some, such as the liver, follow the body as a whole; others, as the muscles, grow more rapidly in proportion, whilst a third group, of which the eye is a good example, hardly move at the time the reproductive organs and muscles are growing most rapidly, their so-called nascent period. These nascent periods also exist in the psychological sphere, and to determine these periods will undoubtedly add to the armoury of the enginist, as it is then that the factor, somatic or psychic, is most susceptible to external influence, good or bad. Already in the physical sphere values have been attached to certain characteristics, for example, relatively long bodied women are said to make the best mothers and relatively long arms are considered a sign of decadence.

The growth of the bones during adolescence is markedly oscillatory and periodic. In general it proceeds from the larger to the smaller bones. Bearing in mind the great biogenic law that the individual recapitulates the growth stages of his race, and remembering that the later stages in great part represent acquired traits transmitted by heredity, we can understand congenital deformities and insufficiencies mostly affecting the smaller bones, such as those of the feet, fingers and toes.

Over development of the muscles, alike as insufficient development, will warp the bones, whilst ill-adjusted school seats, to high pillows and tight corsets often give rise to curvatures.

Some cases of coccygodynia are probably due to the young adolescent sitting too low down on the back. One of the most serious deformities is where the chest has not properly developed, for here the individual is permanently placed on an altogether lower plane of vitality. Bearing out St. Hilaire's law that growth in size and in function are inversely to each

other, so that when either is progressing rapidly the other tends to be stationary, there is no doubt excessive brain work adversely affects bone growth and symmetry generally.

A relation exists between the bones and sexual organs. This is well instanced in osteomalacia, which is associated with ovarian defect. With reference to acromegaly it has been suggested that the normal growth of puberty is acromegalic, and that this disease is due to a recrudescence in late adolescence of the same process.

During adolescence the growth of the heart keeps pace with the growth of the body—the most important fact to be grasped is that whereas before puberty relatively the heart is small and the blood-vessels large, in the adolescent we find exactly the converse, the heart large and vessels relatively small. This involves, as might be expected, a marked increase in blood-pressure. This increment of blood-pressure is closely associated with the increased metabolism, growth rate, mental and physical activity which are so vital to the adolescent. May not the social revolution going on in our midst to-day which we know as feminism be indirectly due to the open-air athleticism and freedom of dress of the modern girl, whereby she receives her proper increment of blood-pressure so vital to her complete development? This sudden and vast change in the relation between heart and blood-vessels is responsible for the frequent occurrence of symptoms pointing to the circulatory disturbances—palpitation, sudden faints, præcordial pains and sensations, cold hands and feet, all showing a difficulty in adjustment and equilibration in the circulatory sphere by the organism. With this knowledge it is often possible to reassure the friends, and save the girl or boy being sent back to school certificated “not to play games.”

The lungs and chest closely follow the curve of weight increment; the greatest increase is at 15 in girls and 16 in boys. The full development of lungs and chest is of paramount importance. The ratio of lung capacity to weight is used as an index of vital capacity, and training consists largely in taking off weight and increasing lung capacity. Although an adult woman exhales little more than half the carbonic acid that a man does, owing to her smaller muscular development, the frequency of respiration is the same in both; the difference lies in respiratory capacity. Most textbooks speak of the change from the abdominal type of breathing in childhood to the costal in girls during adolescence as being a normal pubertal change. This view has been successfully challenged as a result of investigations upon savages and peasant women. The change is probably an artificial one brought about by corseting. I do not think women will attain to their fullest development, somatic and psychic, until their type of breathing is the same as in man. An abundant supply of air is needed by the young adolescent, and Hall, in his book on Fears, describes a complete psychosis due to lack of air, such symptoms as dread of close or narrow places, of the ceiling falling in, dreams of being buried alive, choked, &c.

The brain stands by itself in that it has nearly done growing by the sixth year, and after 12 to 14 the increase is infinitesimal; the skull, however, continues to grow until 20. We can deduce from this that six is the best age to measure the cranial content, and, secondly, that the size of the cranium is no index to size of brain in adult, though its shape may be. We know very little of the structural changes which go on in the brain during adolescence. Several authors, however, have described the development of tangential fibres connecting the different parts of the cortex together, and which go on developing until past 50. The brain may be likened to a lump of sealing-wax almost fluid at birth, just the right degree of softness for taking permanent impressions during adolescence, and then gradually becoming harder until the business man of 60 finds it safer and easier to make the impression with a fountain pen in his pocket book, especially if the hardening process has been helped forward by alcohol.

During adolescence the growth and activity of the secretory glands play a very important, though but as yet little understood, rôle in both motor and psychic spheres. The intimate relations of the thyroid gland, not only with nutrition but with the sexual functions, has been recognized from earliest times, owing to the fact that it enlarges at the first menstruation. With some savage tribes to-day nubility and even virginity are still judged by the size of the neck. One would like to know the significance of the enlarged thyroid of adolescence, and why it is chiefly seen among the well-to-do classes.

The thymus gland, like the suprarenals, is atrophying during the active period of the organism's growth. Bearing on the physiology of this gland is a case published last year in America by Dr. Kerley, where administration of thymus extract to a boy of 16 weighing 5 st., and 4 in. under 5 ft. in height, resulted in a gain of 19 lb. and 3 in. during eighteen months, with a corresponding development of the sexual organs.

In scanning the growth of adolescence note might be made of the fact that symmetry of the two halves of the body which is present in the child disappears during adolescence owing to a specialization of both form and function. A child is relatively ambidextrous, sleeps on its back, stands in repose with both legs straight, but on reaching adolescence now finds it difficult to make symmetrical movements with both hands, sleeps on one side, lops and lolls, and the two halves of the body differ in size and strength. On the other hand, physical abnormalities such as squat noses, thickened gums and habit peculiarities usually disappear during adolescence. From this brief survey of growth during adolescence we see that there is a great change in the relation of parts, which vary in size more or less independently of one another, and are freer from the control of the whole; so that for a time co-ordination is lessened, and equilibrium is disturbed. Now there is a danger of ill-proportioned development often bringing ill-balanced nerve centres in its train at this period of remarkable plasticity which makes the influence of environment very

marked. The important fact to remember is that during this period traits are acquired which become transmissible by heredity. Herein lies the future of our race.

A word may be said on the growth of motor power and functions. The muscles are the vehicles for our thoughts, nay more, for we speak of muscular virtues such as skill, endurance, and perseverance, and conversely restlessness, lack of control, and caprice as muscular faults. Muscles are also the organs of the will. All that man has done in the world has been done by them. In a sense they are the organs of digestion, and there is a close relation between the sexual and motor vigour which burst forth at puberty. Owing to the proximity of the motor centres in the cortex to psychic areas, muscle culture connotes brain building, psychic as well as somatic. The importance of motor education is now being recognized, but those who are inclined to err in the direction of placing it first should remember Flechsig's claim, that, contrary to the view that all parts of the cortex were connected with the lower centres of sense, two-thirds of the grey matter is quite independent. Before puberty scientific motor education is not needed. In the child fidgetiness, restlessness, excitement, and other motor superfluities indicate an abundance of raw material—abundance and vigour of movement absolutely untrammelled are needed. The powers must be unfolded before the ability to control them can be developed. The order of development of motor power during adolescence is an interesting one. Statistical data show that leg power develops first, then biceps and back, and then the forearm. The order of augmentation of these fundamental or basal powers is possibly atavistic, representing the *Wanderlust* of the young adolescent, conflict, and sexual selection.

From fundamental we come to necessary motor power, represented by smaller muscles, whose functions represent a higher standpoint of evolution and are associated with psychic activity. Nature and instinct chiefly determine the basal powers, walking, running, swimming, &c.; education does the same for the accessory. The difficulty is to preserve the balance. It having been realized that accuracy and exactness of movement can only rise to their highest attainment by motor education, we often find kindergarten and school prematurely laying an altogether disproportionate strain on small accessory muscles; as a result the equilibrium in function between small and large muscles is upset and choreic symptoms often follow. Similarly, excessive indulgence in heavy athletics to the exclusion of delicate responsive work in the adolescence coarsens the motor reactions, and leads to clumsy inexactness.

Adolescence is the golden age for muscular development, and although modern life and civilization act as a handicap, a new enthusiasm for physical development has arisen, and the motor areas are being put to school again; it is needed, for the modern industrial system tends more and more to handicap the adolescent, especially the girl, by substituting monotonous one muscle occupations requiring exactness for natural healthy industries; the result being diseases of the necessary systems. The treat-

ment in such cases should be to lay emphasis upon the basal movements ; to throw the activities down the scale, and so restore the psycho-physical balance. Healthy natural industries are less and less open to the young, industrial education is too subservient to the tool, the pupil is discouraged from taking up many processes, and the standard of efficiency is capacity to earn. It is a mistake to confine so many of the subjects taught in technical schools to only those in a particular trade. Of all schools for motor education the farm is the best, owing to the variety of occupations involved, the healthful conditions, and consequent reinforcement of the vital powers. The greatest work that Napoleon I. accomplished for France was breaking the law of primogeniture and so giving access to the land. I am glad to see that the great day of its accomplishment in this country is near at hand. We hope so at least. A year or two at such a farm school would be the salvation of many boys and girls, of every stratum in society, who to-day go under from faulty education of their motor powers and functions in the golden age. At present the only such institution existing in this country is reserved for criminals. Manual training during adolescence lessens the interval between thinking and doing, gives control, ability to appreciate honest work and a sense of capacity. It is a fine training for higher technology, pure science and intellectual pursuits and yet it is computed that hardly 2 per cent. of our adolescents are to-day receiving this training.

I cannot say much on the subject of gymnastics, that is, exercises for purely physical culture with no other ulterior end. I believe they should be discouraged before the nascent period, that is during childhood, for, given the opportunity, the interest and the zest, the momentum of heredity will do all that is required. Unfortunately parents too often begrudge the opportunity and adopt "keep off the grass" tactics with their children. The ideal gymnastics should be inspired, enthusiasm of humanity, patriotism as we see in Germany, religion, for just as the Greek games were in honour of the gods, so the body should be trained to better glorify our Maker and chastity and temperance given a fillip. The military ideal has a great inspiring power, and a paper could be written on the advantages of the boy scout movement for the pre-adult and the territorial for the late adult, and last but not least athletic contests as we see at the modern Olympiad. The ideal gymnastics for the adolescent should not only reach every muscular group and co-ordination but develop new motor variations, as well as rescuing latent and decaying ones. Other ideals spoken of by authorities on the subject are economy of movements and posture, and increase of volitional control, whilst symmetry and proportion should always be aimed at. To kindle a sense of physical beauty in the young adolescent will lead up to the vision of ideal beauty of soul.

GAMES AND SPORTS.

Games and sports are instinct with heredity. They develop fundamental motor capacities which can be transformed later into acquired activities.

This makes them the ideal exercise before puberty. Their great value during adolescence lies in the fact that they give a healthy outlet to the erethism of youth. Play, unlike gymnastics, has heart or soul as well as head. Games give courage, confidence and resolve. In dancing we have one of the most liberal forms of motor education in youth. Rhythm is characteristic of adolescent growth, mental and physical. The craving for rhythmic movement is very deeply seated. From time immemorial the national characteristics have expressed themselves by the dance. Unfortunately, the dance has degenerated, until to-day we see in the modern ballroom only the decadent relic of the vast repertory of rhythmic movements, which not only revealed the national traits, but were the expression of the highest mental attributes. But there are signs of a revival, and I was interested to receive within the last few weeks particulars of a new school of dancing where the greatest emphasis is placed on the rhythm, the so-called *Dalcroze eurhythmics*.

Right dancing gives nervous poise and control, and it is a fine training school for the awkward, clumsy adolescent. In the motor education of the adolescent next in value to dancing perhaps comes personal conflict, viz., wrestling, boxing and fencing, and one of the problems of the education of the adolescent is the right guidance and direction of this natural instinct. Sparta sedulously cultivated it, and Hughes and Arnold, greatest of school-masters, appreciated its value. By developing self-control boxing especially is the surest of cures for bad temper; it makes against weakening of will and loss of honour, both signs of degeneration, and is a fine school for quickness of eye and hand, and force of will and decision. The marvellous rise to power of modern Japan is rightly ascribed in part to Bushido, which designates the Japanese conception of honour in behaviour and in fighting. It is the highest expression of chivalry the world knows to-day. Although most educationalists recognize the value of personal conflict in the development of the adolescent boy, a nice problem arises in deciding to what, if any, extent this form of education should be recognized amongst girls. Non-resistance under all provocation is craven and cowardly, and destructive of a high sense of honour in a girl as in a boy, and I think in fencing we have a most valuable form of motor education for girls. Apart from its value in developing poise and grace, as well as quickness and dexterity, it is surrounded by a halo of romanticism which appeals to the sensitive imagination of a girl, and it has a code of honour which exercises the highest mental qualities. In contrast to the solitariness and aloofness of childhood, it is very interesting to watch the spirit of co-operation and organization develop in adolescence. It is a characteristic of English games and should be fostered, for it helps to develop a spirit of devotion and service.

For the growth of motor power and function in unstriated muscle nothing equals cold bathing. A cold dip contracts the surface vessels, driving the blood into heart, lungs and kidneys, thereby stimulating their

growth. This is followed by the mad rush back to the surface which constitutes a fine form of gymnastics; and the powers of resistance against cold are exercised and strengthened. Swimming as an exercise is of great value, in that it calls into play unique muscle groups and combinations. Nothing reduces plethora of sex organs more, and for this reason the scantier the attire the better. The field of play is practically unlimited, but although games are of the utmost importance for the development of physical and moral qualities during adolescence, more so perhaps than gymnastics, their scientific study by Congresses for example, is hopelessly neglected.

SEXUAL DEVELOPMENT.

Sexual Development.—The literal meaning of the word puberty is to become hairy. It occurs in girls at 13, and in boys a year later, with whom the beard starts at 18 to 19. Non-development of the beard is suggestive of degeneracy, it being noticed in 13 per cent. of criminals against 1 per cent. of normal individuals. The chief physical fact of male puberty is the appearance of the seminal fluid. In the adolescent this is probably re-absorbed by the network of lymphatics surrounding the vesiculæ seminales, and exerts a vast influence on the growth of the organism. This power of re-absorption is weakened by repeated emissions, hence the importance of avoiding reflex stimulation of the spinal centre concerned by irritation and uncleanness, apart from the danger of focusing the attention of the sexual organs. The changes in the female organs of generation at puberty are very complex, and their development is very variable in both structure and function, being easily arrested in their later stages by error in food and regimen, also unhealthy occupation or bad environment; perhaps this is most observed in the case of the mammary glands, they responding acutely to psychic and physical conditions, inability to nurse that is so frequently met with being often the result of an acquired hereditary degeneration. A word must be said on the subject of onanism. Apart from the effect upon the individual, which varies enormously, the seriousness of the vice lies in the effect upon the next generation, incomplete maturity of mind and body so often showing itself. It is one of the easiest and most spontaneous of vices, and in very young children is said to be more frequent among girls than boys. Comforters, and sucking thumbs and fingers in late infancy are said to predispose. It is most common in the early years of puberty. Precocious mental development, the tuberculous diathesis with its premature ripeness and activity of the reproductive process strongly predispose. Skin diseases that cause itching, constipation, irritating urine, laziness, which are in many cases the expression of wrong dieting, also predispose. If only mothers would realize the danger of feeding up, of forcing children to eat beyond their appetites, even the plainest food! It should not be forgotten that the young adolescent is extremely sensitive in all matters relating to sex, but is also hungering for vital knowledge, counsel and

sound advice. Being the period of utter plasticity for prevention as well as cure it is the golden opportunity. Early rising, cold baths, washing without wiping, filling up every moment with interests and tasks that are active and absorbing, are all helpful in curing the habit and right instruction in sexual hygiene is very important. There is a strong and natural instinct to know the laws of life and reproduction, so that instruction in such matters is imperative and should be betimes. The study of flowers, which most children love, and their fertilization is a good introduction to what should be the most inspiring of all topics to teach son by father, and daughter by mother.

The variations in time of the first onset of menstruation have been studied by many investigators. In general we may say that the influence of environment is more potent than that of heredity. It has been noted that the bigger girl is earlier, blondes precede brunettes, and the country girl is later than her city cousin. This last bears some relation to the fact that the strong girl is later than the weak one. Climate has not the influence generally ascribed to it, the precocity of the Indian girl being due in great part to too early knowledge and sexual excitement. Education also accelerates the onset. The first few as the last menstrual epochs have a marked influence on the nervous system. The girl is acutely sensitive liable to headache, tearfulness, and irritability. She changes from elation to depression, and *vice versa* very easily, all symptoms of acute and stormy psychoses.

The whole phenomenon makes a profound impression on the girl's mind and constitutes a strain upon her mental faculties; and when it first appears as something unknown and unexpected, the danger to the psychic equilibrium, especially in morbid, nervous girls, is increased. Everything that jeopardizes the harmony and balance of the many factors involved should give way. It is at this time as at no other the girl needs the fostering care of a good mother. Instead of shame she should be taught reverence for the function. In this respect the schoolmistress is often a great sinner, for instead of treating it as the Sabbath of the girl's physiological life she often adopts an attitude of disapproval, minimization, and would-be elimination. In savage life the necessity for seclusion, for rest and quiet is almost universally recognized. The tepee set apart by the North American Indian for menstruating girls, so constructed as to compel the inmate to sit or lie, suggests sound principles of health. Speaking of the schoolmistress suggests a few remarks on the education of the adolescent girl. It is too often a slipshod imitation of her brother's, the result aimed at being successful competition with him, and this notwithstanding that there are characteristic differences between the sexes in every organized function. Her sympathetic nervous system relatively to the cerebrospinal is more highly developed. If not perverted, her psychic activities obey the laws of heredity. She works by intuition and feeling—the opposite sex more by logic and reasoning—her emotions having a much wider range. If, as too often happens, her education is

directed to teaching her to guide and account for her actions by deliberation, she loses more than she gains. School should be a larger home, and the ideal civilization would exempt her from sex competition by consecrating her to higher responsibilities, for the carrying out of which I think she is right in demanding a place in the sun. Girls should be educated more in body than in mind. Girls are too much governed at school, they need more freedom than the boys, more outdoor recreation to develop to complete maturity their bodily vigour upon which the future of the race depends. I would hang a picture of that tepee in every head mistress' study. Most great men's mothers were women of strong mind but not highly educated. Sir John Clouston reminds us that none of Shakespeare's heroines were learned: even Portia was an unlettered girl, unschooled, unpractised. Sir John Clouston has broken many a lance in the cause of female education. He holds that each generation can use up more than its share of energy--women have this power more than usual--thus robbing future generations. Clouston conceives the life of man as consisting of several stages, each of which should be lived in such a way as not to draw upon the reserves of the next stage. He suggests that in the same stage even, one organ is able to be over-developed at the expense of others. This is specially true of the adolescent period. Girls should do hardly any steady work for a year before and a year after puberty. Their work should be adjusted to the law of their nature. Work for one-fourth of their time, and one-fourth for the tepee, for in the course of the development of the mind the normal proportions are lost, to be regained on a new plane, and there is a danger of increasing an advantage that should only be held temporarily in the struggle for existence by some one quality of the manifold faculties and tendencies within us. The ideal of education in adolescence should be to develop capacities in as many directions as possible. Dr. Playfair, in a paper published in the *British Medical Journal*, emphasizing the sensitiveness of girls at this age, holds that the regimen during this critical menstrual epoch decides whether she shall have stamina and resisting power or collapse to invalidism at every strain. The theory that the sexual question is of secondary importance, that there is need for but little difference in the education of the two sexes, may in part account for 70 per cent. of school girls at 16 years ailing more or less, chiefly from anæmia and menstrual troubles. As I have already mentioned, in early adolescence girls need a great deal of outdoor exercise, more so than boys. Squeamishness about food, habitual constipation, listlessness, clammy hands and such like should be combated by running, golf, tennis, net ball, skipping, dancing, fencing, and the like, not so much by physical exercises. All forms of corsets should be forbidden, or better, made impossible by the games indulged in.

The matter of education of women is outside the scope of any paper, but, as germane to the subject, I might mention that reliable data are available which conclusively show that the more scholastic the education of women the fewer children they have, the more severe parturitions, and

the less their ability to suckle, which simply amount to this: Nature has decided that the highly-educated woman is unfit and, accordingly, is eliminating her. The difficulty which faces the conscientious parent who is unable to leave his daughter provided for, is to give the girl a training which will fit her to be a wife and mother, and at the same time enable her to earn her own living. Certainly the feminist who would educate every girl with the view of making her a self-sufficient wage-earner, able to compete with her brother, is breeding temperamental neuters.

It is a difficult problem which, however, is not being lost sight of. Quite lately I read in the daily press an account of how the problem is being successfully solved by a large chocolate firm in the North (I refer to the Rowntrees).

To sum up, one may say that in the education of the girl health should come first; food, sleep, exercise, and manners—by which is meant self-control and an unselfish regard for the feelings of others—are all important, and pervading all should be regularity. Periodicity is one of the basal laws of life. That being so, everything should give way to the monthly rest, physical and mental, until the menstrual function is thoroughly established, and at this time personal instruction on sexual matters should be given. A girl should be taught to regard the function in a spirit of reverence, as a foreshadowing of her greatest mission in life—true motherhood—not as a badge of inferiority to be concealed and ignored.

DISEASES OF ADOLESCENCE.

I now wish to briefly capitulate some of the symptoms of ill-health most commonly observed during adolescence. Adolescence, of all the periods of life, is the most prone to ailments, and is marked by a high percentage of ill-health. Most of this ill-health is due to disproportionate growth. A severe competition is going on within between organs and tissues, and if the balance is upset, ill-health is the result. It is not surprising that the balance is often upset. The relations between the factors, psychic and somatic, which constitute the organism are constantly changing, and this means a loosening of the bonds which unite them and consequent instability of the organism as a whole; and this is specially true of girls.

Dr. Hertel, of Denmark, examined 17,000 girls and 11,000 boys in early adolescence, and found 29 per cent. of the boys and 41 per cent. of the girls sickly. Statistics from other European countries and the United States show practically the same ill-health incidence. Dr. Hertel held that the demon of education was the cause of the appalling national invalidism, and that the vigour of the future man was being squandered by the school. He insists that in both sexes from 13 to 15 there should be a great reduction in school hours. His tables show that of children that worked more than the normal time 7 per cent. more were ill than of those who worked less than the normal time. Yet we have our London

Education Committee proposing compulsory evening school for young adolescence, the majority of whom were already working ten and twelve hours a day. It is a sign of the times that it was a woman's organization—the Women's Co-operative Guild, with its 30,000 members—which pointed out the folly of making such a demand on the energies of growing boys and girls.

Disorders of digestion are very common during adolescence. The appetite is often capricious and may be perverted. There is a considerable diversity of opinion on the subject of dietary amongst medical authorities. In forcing ideal diets on young people it is possible that too little account is taken of heredity, but it is as important as it is difficult to establish a well-balanced dietary, for the eating habits of later life, good or bad, are now acquired. Perversions too often unnoticed, and unmet now, are responsible for failures in after life. In the motor sphere irregular growth is characteristic of adolescence. Godin holds that of any particular organ or tissue, if prolonged more than three months, such irregular growth becomes pathological; for example, if the cartilages of the larynx grow and widen before the cords lengthen the pitch of the voice is raised. Normally the cords catch up in a few months; if their growth is retarded the pitch of the voice remains permanently high. Similarly in the limbs and trunk, if the muscular remains in advance of the bony growth lax abdominal walls and articulations result. Scoliosis is often the result of disproportionate bone increase.

We have seen how the heart doubles in size but becomes small in comparison to its vessels. As might be expected, circulatory disturbances are very common. Langour, sudden faints, palpitation, feeble and irregular pulse and dyspnoea are frequently complained of, and are often associated with varying degrees of cardiac dilatation. The symptoms are usually aggravated by the slightest constriction of the trunk by clothes. Until the circulatory equilibrium is firmly established it would be wise to restrict boys under 17 in school sports from racing more than 440 yards.

The relation of sleep and dreams to adolescence is an interesting one. Sleep often becomes perturbed and dreams more vivid at the outset of puberty. Some observers hold that dreams have an important influence on the moods and dispositions of waking consciousness at this age and that they are the outcome of the subconscious self asserting itself. Irregularities are often very marked. Periods of prolonged sleepiness alternate with periods of disinclination to go to bed and marked wakefulness. This should be borne in mind by pedagogic parents. The average time given to sleep should be ten hours between 11 and 14, and nine hours between 14 and 17. The nervous system and mind are very liable to disturbances during adolescence. An emotional strain is normally present which makes morbid impulses difficult to repress. A common trait of this period is a craving for something objective to attach to; this may lead to the idealization of unfit persons or the creation of imaginary ones, if not carefully controlled and guided.

Heredity is an important factor in the causation of pubertal insanity, especially among girls, but the disorder is undoubtedly precipitated by bodily ill-health, often the result either of overwork with the brain or bad nutrition. Dr. Maudsley has offered a very lucid explanation of the occurrence of adolescent insanity. He suggests that reason is an apparatus of restraint imposed upon intense and brutal impulses atavistic in origin. This curb is broken; the bonds with which a later civilization has bound the many wild factors of our nature are ruptured. The high social reflexes are lost; diffidence and reserve give way to self-will and aimless turbulence. Owing to the power of the organism to regain its equilibrium at this time of life under suitable treatment the prognosis is usually good. The greatest proclivity to epilepsy occurs during adolescence, the sexes being equally affected. The prospect of cure is poor, especially where there is an hereditary taint. A childish form of hysteria is sometimes seen, it usually occurs between 7 and 14, and the worst cases are seen among the poorly educated; it is usually associated with unhealthy environment. There is a close inter-relation between the cerebro-spinal and sympathetic nervous systems at this age. Owing to the difficulty in maintaining the balance between normal excitation and repression of sexual function the normal tension in the sphere is often lost. Psychic lesions here readily become physical and *vice versa*: anxiety becomes cramp, mental strain acute neuralgia, and moral disquietude nausea. Such metamorphoses account for many symptoms besides hysteria; sudden strong impressions, amounting to psychic injuries at this unstable period, especially in women and in the sexual sphere, may entail complex, long-lasting results. Hence the need of shelter from shocks and of wise mentors and advisers on sex matters. There are many other forms of morbid instability that there is no time to refer to.

Closely allied to the diseases we have the faults and vices of adolescence. It is a sad but startling fact that adolescence is pre-eminently the criminal age, and what makes it even more serious is the undoubted fact that juvenile delinquency is on the increase. That adolescence is the criminal age is due not only to the greater instability of the factors which go to form our ego, but owing to unsuitable environment and faulty upbringing the oldest atavistic factors which are on the lowest plane remain dominant instead of giving way to newer and higher groups of qualities. Another factor in the increase of crime may also be connected with the increase of urban and decrease of rural population. The young adolescent has a difficulty in adjusting himself to the complex social surroundings of the town. An instinct inherited from his earliest progenitors makes him resist the institution of property, and on passing out from the home he comes in collision with a severer code of conduct before he is hardly aware of its existence. Normal children pass through stages of laziness, lying, vanity, absence of moral sense, &c., during which time it is only lack of strength and insight which prevents them being a danger to the community, so that to magnify the soul, to encourage psychic precocity

before these animal instincts are reduced to due proportion and control by conscience and reason, is to invite disaster; for crime in juveniles is only fault writ large. The lesion is usually one of sentiment, not of intelligence, for the young criminal is often bright, lively, and intelligent.

Inattention is said to be one of the most dangerous of faults. It places the child at the mercy of its environment with all its changes, and is one requiring the greatest patience in remedying. Then untruthfulness. Hall, who is an authority on juvenile faults and crimes, says in the treatment of such the beginning of wisdom lies in discriminating between good and bad lies. The lies of fancy, have been described as the birth pangs of the imagination, whilst the worst lies of all are those prompted by selfishness. In girls especially, the lie prompted by the passion for acting a part, attracting attention, &c., should be regarded with grave apprehension.

Truancy and vagabondage are suggestive of hereditary prepotencies. Truancy is commonest at puberty, which was the age of majority in the primitive man, and the truant's usual objective being the water, may be related to the fact that the safest way to travel in those early days was by water, owing to the country being thickly wooded and abounding in carnivora. Revenge is another very deeply-seated instinct and is reinforced by the sense of indignation which is very marked in the adolescent. Envy and jealousy, which are responsible for half the crimes of juvenility, develop very early in adolescence. It would seem that if the psychic traits all developed in the same proportion from puberty on, most adolescents would finish as criminals. This disaster is only averted by the appearance of acquired hereditary factors, which control and dominate the lower feral prepotencies. It should be the aim and duty of each succeeding generation to add to the armoury of the first named hereditary factors.

The subject of immorality I can only mention to leave. It is a vast and complex one which has yet to be adequately dealt with. From our knowledge of primitive man, we may say that it is not so basal as other psychic phenomena, but was acquired later, and, therefore, the weakening of the prepotencies which lead to immorality should be the less difficult to the guide and teacher. The sense of shame, or instinct we call modesty, is one of the most effective barriers against this vice; also in less degree self-respect and power of foresight. Anything that upsets the poise, regularity, and rhythm of the organism tends to this colossal evil. This is suggestive of faulty social conditions.

The treatment of juvenile crimes and faults is one of the burning questions of the day. Control and correction, not punishment for vengeance, is essential in dealing with the adolescent, and isolation if degenerate. The trend of thought to-day is that juvenile crime can only be cured by bettering the individual and his or her social conditions, and very little, if at all, by criminal codes, however skilfully drawn. Fortunately, the State is gradually assuming the right to exercise the parental functions

where there is a danger of faulty environment and education; and the physical and moral education of the child is becoming less the private right of the parents, but rather their first and highest ethical duty.

A year or two since, towards the end of a fascinating presidential address that was being delivered by a distinguished predecessor, I heard someone whisper, "I wonder how he is going to drag in homeopathy." I also would like to adorn my tale. One aim of my paper has been to capitulate and emphasize some of the characteristic or guiding symptoms of adolescence. The other stages of life have their characteristic symptoms, so much so indeed that certain drugs have become associated with those periods in life, such as calcarea in infancy, lachesis with the menopause, and carbo. veg. with old age. The same holds good for adolescence.

Pulsatilla has a considerable place in the treatment of disorders of female adolescence. We all know the emotional pulsatilla patient, with her ever-changing symptoms, irregular sleep, indigestion from eating rubbish, anæmia, and scanty, long-drawn-out periods. But regarding adolescence apart from sex, pulsatilla has not quite the deep elemental characteristics of this epoch, and also the drug is suggestive of the whole of the reproductive stage of a woman's life, not adolescence in particular. There is a drug, however, which has very suggestive symptoms. I refer to manganese. Manganum with its salts is, I think, specially related to adolescence apart from sex. It has many of the deep basal symptoms which are not so conspicuous as with pulsatilla. It is recognized by the orthodox school as playing an important catalytic part in tissue building, and in this relation there is a copious literature, but entirely continental. It is recommended for the chlorosis of adolescence by writers on orthodox therapeutics.

I am indebted to Clarke's "Materia Medica" for most of the following symptoms. The manganese patient is self-centred and reflective, liable to despondency, ill-humour and weeping; has periods of anxiety and fear. Most of these symptoms, which have been verified clinically amongst patients taking the manganese waters at Chausac, are very suggestive of the mentality of early adolescence. The patient has headaches, sleep is irregular and accompanied by vivid and anxious dreams. Every part of the body feels sore, there are bone pains in lower extremities, going from ankle to ankle, from one shin or heel to the other; these symptoms are very characteristic of manganum, and closely resemble the familiar growing pains, the result of the outburst of muscular growth, which are commonest in the lower extremities, owing to growth being most rapid there. Chlorosis and anæmia are more marked with this drug than with pulsatilla. The manganum patient has too scanty or profuse periods. The explanation of this apparent contradiction is that the drug restores the balance. This is the keynote of the drug's action in adolescence. Palpitation is another prominent symptom that was verified at Chausac. The pulsatilla patient is better in the open air, but the manganum patient may want to go out or come in (which I interpret as meaning whichever

will help in restoring the equilibrium). Altogether manganum would seem likely to be of great value in the treatment of disorders of adolescence. The question of dilution and repetition I leave to more experienced hands. The great emphasis laid on rhythm, both in prescribing and as affecting the action of drugs in a recent paper by Drs. Tyler and Weir, is based on a sound physiological principle specially characteristic of adolescence. Having tried, however feebly, to adorn my tale, I will leave it to others to point the moral with this postscript. It is during the state of adolescence that the future of the individual and the race is settled. It is then that entirely new qualities of mind and body are acquired which become hereditary. The organism is in a state of plasticity, so that environment is most powerful in bringing mind and body to the fullest and highest development and completest maturity. Now are the foundations of social and religious life laid. The future success or failure in life depends on how the new powers now so suddenly given are husbanded, directed and cared for.—The *British Homœopathic Journal*, November, 1913.

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SOME RELATIONSHIPS OF THE SCIENCE AND
ART OF HOMŒOPATHY.

BY DUDLEY D'A. WRIGHT, F.R.C.S.

THE address which I have to deliver to-day is introductory to a series of lectures on Materia Medica and Therapeutics which my colleagues Dr. Goldsborough and Dr. Wheeler will deliver here in the course of the present session.

These lectureships have been established by the Trustees of the late Mrs. Elizabeth Honyman-Gillespie of Edinburgh, in co-operation with the Board of Management of the London Homœopathic Hospital and of the British Homœopathic Association, in accordance with the terms of a trust for the purpose of founding, or contributing to found, a new school of medicine which shall embrace the teaching of Homœopathy as well as ordinary medical subjects, and other new and useful cognate studies.

This introductory lecture is given under the ægis of the Compton-Burnett Fund, founded in commemoration of the late Dr. James Compton-Burnett, which fund has also established a Professorship of Homœopathic Practice, the lecturer for this year being Dr. John Weir.

These three sets of lectures are intended to supply post-graduate instruction, so that all medical men, especially those who have just qualified, may have an opportunity of learning the principles of the homœopathic system, and, in conjunction with the clinical work at the Hospital, both in the wards and out-patient departments, may have the additional advantage of seeing its practical application.

During the summer months a special post-graduate course is held; a series of lecture demonstrations being given by members of the medical and surgical staff of this hospital on particular subjects, the endeavour being made to exhibit the rarer or exceptional cases of disease, and deal with special aspects of treatment, including the applicability of remedies chosen according to the homœopathic principle.

And in order that none should be debarred by lack of funds from taking advantage of this instruction, the Sir Henry Tyler Scholarship Committee offer a certain number of scholarships of from £5 to £20 to enable any who are thus prevented from attending to take out the course of Compton-Burnett lectures.

In addition to this the late Lady Tyler and Dr. Margaret Tyler have presented scholarships of the value of £150 to enable young graduates to go to America for six months and there study the methods of prescribing which are taught in that country. Dr. Margaret Tyler informs me that during the past five years one female and thirteen male graduates have been presented with these scholarships.

Finally, there is a Ladies' Travelling Scholarship presented every two years by the British Homœopathic Association, which enables the holder to go abroad to Europe or America to study diseases of women and children. The present holder is Dr. Cunningham, late Resident Medical Officer of this Hospital, who is now studying in Vienna.

From the particulars which I have given it will be readily seen that considerable facilities are afforded to students of Homœopathy in this country who are desirous of acquiring a knowledge of the science and art of this branch of therapeutics.

By "science" we mean the facts which experiment and research have established; and by "art" the practical application of these facts for the cure of disease.

If I contrast the conditions obtaining at the present time with the state of things twenty-five years ago, when I first studied Homœopathy after completing my medical education, it will be seen how much better is the provision made for students now-a-days. At that time the would-be inquirer was left to pick up his knowledge, partly from books, and partly from attending the clinics of the Hospital and the monthly meetings of the British Homœopathic Society, where papers on medical subjects were read and discussed. There was no regular systematic teaching carried on, and beyond a fairly complete library at the Hospital, there was very little inducement for students to look into the subject.

The absence of organized teaching was certainly not for lack of good teachers. I need only mention the names of Hughes, Dudgeon, Drysdale, and Hayward, all of whom were living at that time, to prove that the material was there, but apart from a small fund left by the late Dr. Bayes for the purpose of founding a school of Homœopathy, and named after him, the Bayes Fund the proceeds of which were, I believe, at that time used by the Hospital, no money existed for the payment of lecturers.

A few years later an attempt was made to resuscitate the old school of Homœopathy which had fallen into a state of suspended animation, and the Hospital authorities handed over the income of the Bayes Fund for this purpose, but it was not until the establishment of the British Homœopathic Association in the year 1902 that a real move was made in this direction, and when the trustees of the Honyman-Gillespie Trust made the grant of funds the teaching was put on a firm basis, and with results which are in every way satisfactory and promising.

But although up to the present time we have every reason to be satisfied with what has been accomplished, it is not in the order of things that we should lack ambitions for the future. It is not to be expected that the goal of our ideals is reached, and

that our development as a teaching body is to stop at its present limits.

Since the last addition to our Hospital in Great Ormond Street—the wing named after Sir Henry Tyler—there now exists a sufficient number of beds to qualify the Hospital for recognition as a Medical School by the Education Authorities; and it needs but sufficient funds provided by some benevolent donor to enable the Association to set to work to establish such a school.

The chief difficulty which would be experienced in forming such a teaching institution would, I apprehend, come from the lack of teachers from among our own rank with both the time and qualifications to give high grade instruction in such special subjects as Anatomy and Physiology, though of course there is no reason why we should not go outside the limits of our own body for teachers of these particular studies.

I think, however, that there is a general feeling in homœopathic ranks that we have enough to occupy ourselves just now in what concerns the teaching and propagation of Homœopathy, without taking any active steps in the larger area of general medical training. It would, perhaps, be wiser to mark time in the latter direction, and to direct an effort towards certain sides of our work which need further elucidation or extension.

I hope shortly to indicate a few of these avenues of research and activity, but before doing so I should like to give voice to the conviction that Homœopathy has nothing to fear from any advances in scientific discovery. Far from fearing, we all welcome any discoveries which have the remotest bearing on therapeutics, for we are convinced that the lines of progress of the healing of disease by drugs will be such as to confirm the truth of the law of similars enunciated by Samuel Hahnemann.

Various investigators who have had no connection with Homœopathy and whose views would be altogether in an opposite direction, have substantiated more or less completely the law of therapeutics which Hahnemann formulated, and within the last decade these confirmations have been coming in more and more

abundantly, the latest form of treatment, *viz.*, vaccine therapy, having been pronounced by professor Von Behring, a leader of the German medical world, to be closely related to Homœopathy.

It might be well to explain that the vaccine treatment is based upon the principle of injecting subcutaneously small quantities of the dead bodies of bacteria and the poisons associated with them for the cure of the disease which these bacteria are responsible for. As an instance of this, let us take a simple affection such as boils. These are caused by a particular form of bacterium. This organism is isolated from the pus expressed from the boil, and carefully grown on a suitable nutrient medium.

From this so-called culture a preparation is made containing the dead bodies of the bacteria and their poisons, and this is diluted to the required extent, and a small quantity is injected into the patient.

It is found that immediately following such an injection a period usually occurs in which the patient's power of resistance to the bacterium is lowered, but this is quickly succeeded by a heightened power of resistance which lasts a variable time, and during this period the disease undergoes an amelioration, and subsequent injections may so increase the patient's capacity for overcoming the germs that the disease is completely cured.

Thus is the injection overcome on the principle of "a hair of the dog that bit you," and it is not surprising that our German professor labelled it "homœopathy."

Unfortunately, not all von Behring's colleagues are so fearlessly candid as he, and, therefore, the true meaning of these discoveries is lost to the general run of practitioners for want of a proper interpreter.

And not only can it be shown that in drug and vaccine treatment the law of similars is potent, but the same holds good in the case of the various forms of physical therapeutics, as I shall have occasion to point out.

Further, the latest discoveries in the realm of Chemico-Physical research indicate that the dilution of remedies in the

particular way taught by Hahnemann is in the right direction, and truly 'scientific. Many are the proofs now forthcoming of the importance of infinitesimals in every vital action, and much of this is at this time of day common knowledge, and many of you may be familiar with it. However, it would be well to say something on this head, for in the past, at any rate, this has been one of the chief points which the opponents of Homœopathy have attacked and held up to ridicule. How is it possible, or in accord with common sense, they say, that remedies diluted thousands of times can possibly have any effect whatever? If healing there be, it must be by means of the faith of the patient and not through any efficiency of the drug.

But with the facts at our disposal we can afford to bear such strictures with equanimity, for the balance of evidence is all on our side.

In the realm of physics, a case in point, as throwing light on our practice, is the conveyance of electric currents through liquids containing salts in solution. The results of experimental research on this subject have an interesting bearing on what is called the "potentising" of our remedies. In this case it has been shown that the electric current is carried through the liquid by infinitesimal sub-divisions of the substance which is in solution in the liquid. These infinitesimal portions are called "ions," and each carries a positive or negative charge of electricity, and moves through the liquid and gives up its charge to one or other electrode, *i.e.*, the terminal by which the current enters or leaves the fluid. This conduction may figuratively be represented as taking place by the passage of discrete quantities of electricity in much the same way as water is sometimes carried from a lake to a burning house by means of a chain of bucket-bearers, each bucket representing an ion with its electric charge.

Now it has been proved that dilution of the substance in solution, up to a certain point, increases the number of ions which are free to carry the electric current. In concentrated solutions these ions are bound up and cannot move from pole to pole, but the weaker the solution is made, up to a certain point,

the greater the number of free ions, and the greater the conductivity of the fluid for the electric current.

It had been surmised by some that these ions are the active parts of drugs, at any rate in the case of metals, salts, and acids; and the above mentioned fact gives support to the doctrine of Hahnemann that trituration and dilution of remedies increases their curative powers by freeing the active principle.

Whether we are right or not in conjecturing that the ions are the active agents in potentised remedies, there can be no doubt of the fact that some force is set free by this method of "potentising" which the Homœopathic school adopts. Hahnemann asserted that it released the "dynamis," or indwelling spirit of the drug. This "dynamis" corresponds with the "arcannum" of Paracelsus; at least it would seem that the same fundamental idea gave birth to both theories.

Paracelsus said of the arcannum: "It is not the visible outward thing, the plant or mineral which we look upon, but the indwelling spirit." It is probable that Hahnemann was aware of these views of Paracelsus, though the idea of, so to speak, breaking up the drug, previous to its administration and so freeing the dynamis appears to have originated in his own fertile brain.

It is, perhaps, not a difficult task to explain these ideas of Paracelsus and Hahnemann in terms of modern science, and for this purpose I will make use of the following quotation from a paper on "Modern Science and Homœopathy" by my esteemed colleague, Dr. Percy Wilde. He says:

"It is known that it is a law of the universe that there must be affinities between agents which influence each other. We have already seen that disease is essentially disorder of the life force (or forces). And I do not see how it is possible to reason otherwise than that drug action, whether pharmacodynamic or therapeutic" (*i.e.*, in its power to produce symptoms or to cure disease), "implies some property attached to the drug—its relation or emanation—which is related in an affinitive sense to the life forces, and can thus call forth an action of life forces. And this gives a clear explanation of how drug attenuation is possible,

and in fact, in many cases, necessary. We require a medium which will receive and carry the radiations or emanations, and even to develop them from the material drug to which they belong, and thus we get away from the original substance."

"Thus, to use an analogy, certain agents can receive from radium the radio-active properties and transmit them. A cruder illustration is that scents are not scents unless there is an aerial medium to convey the emanations.

We have already seen that the more matter approaches the imponderable, the more it develops powers and forces undreamed of before. Homœopathic attenuation is undoubtedly a development of these undeveloped forces; either an accentuation of forces already manifest, or the appearance of forces not yet known, as with the case of insoluble and other salts. It is a well-known fact that our deeply acting medicines are chiefly used in the higher attenuations, or, to use a better word, potencies. To my mind, that means that the properties attached to the drug have been aetherialised or spiritualised, if I may use these terms, and so made capable of producing in the life forces a greater action because less materialistic, and, therefore, more in affinity with those forces.

Physicists are now agreed that the more matter is broken up into small mass and made discontinuous, the more it alters its properties. The nearer we get to the atomic nature of any substance the more we find its properties modified. Even the action exerted on them by what we term physical laws is modified to some extent. An example of this is seen in the particles composing the tail of comets. These particles are so infinitely minute in size that they are no longer amenable to the power of the force of gravity exerted by the sun, but are, on the contrary, acted upon by some centrifugal force, so that as the comet passes round the sun, we have the anomalous circumstance of the tail pointing away from, instead of towards, that luminary.

Another example of this modified action of physical laws when acting on imponderable is the following, which I have abstracted

from Professor Poincaré's book on "The New Physics and its Evolution" (Page 97). He says:—

"Modern experimenters have succeeded by direct experiments in placing in evidence this altered character of matter when taken in small mass. Thus, for example, the superficial or surface tension, which is constant for the same liquid at a given temperature, no longer has the same value when the thickness of the layer of liquid becomes extremely small. Newton noticed even in his time that a dark zone is seen to form on a soap bubble at the moment when it becomes so thin that it must burst. Professor Reinold and Sir Arthur Rucker have shown that this zone is no longer exactly spherical; and from this we must conclude that the superficial tension, constant for all thicknesses above a certain limit, commences to vary when the thickness falls below a critical value, which these authors estimate, on optical grounds, at about fifty millionths of a millimetre."

From experiments, Professor Quincke has obtained similar results with regard to layers of solids. He and others have shown that all the properties of a body are modified when taken in small mass; including their optical properties and their electric conductivity. M. Houllevigue has recently demonstrated that copper and silver cease to combine with iodine as soon as they are present in a thickness of less than thirty millionths of a millimetre. It is this same dimension likewise that is acquired by the smallest thicknesses it is possible to deposit on glass. These layers are so thin, that they cannot be perceived, but their presence is revealed by a change in the properties of the light reflected by them.

Thus, below fifty to thirty millionths of a millimetre the properties of matter depend on its thickness. This, I think, is a most important fact, showing what minute division will do in the way of altering the physical properties of bodies; and if the physical are thus altered, we have reason to suspect that the chemical or physiological properties likewise undergo a change.

Though not bearing altogether on this particular point, I should here like to bring in another illustration from physical chemistry of the action of infinitesimals.

Under certain conditions, what is called a supersaturated solution of a salt may remain in the fluid state without depositing solid crystals. If to this supersaturated solution an extremely small crystal of the dissolved substance, (a so-called germ) is introduced, what is called the *equilibrium* of the solution is immediately disturbed, and its crystals are deposited in it.

Professor Ostwald desired to find out how small a quantity of salt would suffice to call forth this crystallization. For this purpose he made use of the method of treating the salt with powdered quartz in the same way as homœopathic triturations are prepared with sugar of milk.

By constantly trying weaker and weaker triturations he discovered that one-tenth milligram of a fifth centesimal triturate was sufficient to call forth crystallization, but one-tenth milligramme of the sixth centesimal was ineffective. In round figures this would show that one millionth of a milligramme of the solid salt suffices for the dissolution of the supersaturation.

There exists a vast number of questions which would form suitable subjects for research, did we possess a properly equipped laboratory, and suitable workers in this field, and I can conceive of none more important at the present time than the effects on the vital processes of living cells of the various remedies common to our school.

Dr. Wheeler, who has had charge of the Association Laboratory, has done some work in this direction in connection with the action of increasingly minute doses of *Arsenic* and *Perchloride of Mercury* on yeast cells. He has shown that whereas a large dose is lethal, infinitesimal doses are actually stimulants of the growth of the cells.

He has been good enough to give me some particulars of his experiments which he hopes to publish later on. He tells me that it can be accepted as a general rule that substances which in large doses prove fatal to living cells, in small doses act as stimulants to their life activities. He has made the interesting observation that the stimulant action can be observed with attenuations of the sixth to twelfth decimal dilutions, but that

above the twelfth decimal no consistent results are obtained. Dr. Wheeler is careful to point out that we are here dealing with living, and presumably, healthy cells, and that these figures are really no criterion when treating diseased tissues. It may be that in the latter case the cells composing the diseased area are capable of being acted upon, or responding to dilutions considerably higher than the twelfth decimal attenuation.

In suggesting that simple living cells should be made the object of research, I am fully aware that to this kind of work objection may be taken on the score that in the healing art we deal with patients and not with simple living cells, and that facts obtained concerning the vital processes of the latter can be of little service to us when we are called upon to deal with the former. I fully recognise the importance of this contention. It is true that the symptoms produced in provers of remedies can in no way be compared with those produced in isolated cells. In the latter we have, little which is comparable with the totality of symptoms the result of combined organic processes which go on in the complex human body, to say nothing of the emotional and psychical states called forth by the drugs employed in the experiment; at the same time we have, in dealing with isolated cells, the advantage that they can be more easily dealt with and kept under observation under fixed conditions of environment, and such like, in a way that it is impossible to do with provers. And, further, the value of these minute living entities is inestimable when we consider what delicately sensitive instruments they are.

However wonderfully delicate man-made instruments may be for recording chemical and physical changes in living or inert substances—and their delicacy will be appreciated when we learn that an instrument termed a bolometer will register a rise or fall in temperature of one millionth of a degree—they are nowhere in comparison with the exquisite sensibility of living cells.

As examples of this I will give some facts from investigations made by Professor Charles Richet of Paris. This observer, experimenting with the organism of fermentation of milk, found

that quantities of metallic salts corresponding to the infinitesimally small dose of the ten millionth of a milligramme per litre (in the case of Vanadium salts for instance) are not without some effect on the fermentation of milk, and this figure is altogether extraordinary, for the ten millionth of a milligramme exceeds in infinity all that we are accustomed to take into consideration. Nevertheless, the lactic ferment is capable of discerning this amazing dilution, and as there is in a litre which is fermenting a hundred thousand milliard cells, and perhaps more, it follows that the quantity of *Vanadium* which acts upon each cell is represented by a fraction of a gramme so small that twenty-five zeros would be needed to express it.

It was found that all metals acted in the same way as *Vanadium*, especially *Thallium* and *Barium*. The Professor says that one may well ask whether one has here to deal with a chemical action, or an action more or less analagous to that of *Radium*.

It is interesting to find Professor Richet throwing out this suggestion of the analogy to radio-active substances. It will be remembered that Dr. Wilde, as quoted above, drew attention to this analogy.

Whatever may be the explanation, there can be no doubt that we do not know the limit of the sensitiveness of living cells to this kind of action. Experiments have shown that so far as chemical action is concerned, where the vitality of cells is at stake, the sensitiveness is of the most searching nature.

An experiment of Englemann's illustrates this in a striking way:—

Certain micro-organisms of the infusorium type containing chlorophyll or the green colouring matter of plants in their cell-body, are made to live in a liquid containing oxygen-loving bacteria. This liquid is exposed for one second to the rays of the sun, and at once all the bacteria are seen precipitating themselves towards the chlorophyllian infusoria. This is because the infinitesimal quantity of chlorophyll exposed to the light during the second has decomposed a portion of the carbonic acid

present in the liquid, and liberated oxygen, which attracts the bacteria. In such a case we have to do with an imponderable quantity. But this quantity is sufficient to make the bacteria precipitate themselves with violence towards this thousand millionth part of a gramme, and a still smaller quantity of oxygen which has been given off.

Many similar experiments could be brought forward, but enough has been said to prove how delicately do living cells react to imponderable quantities of chemical substances, and one may justifiably draw the conclusion that if physiological processes are set going, or influenced, in any way in healthy living cells by such inconceivably minute quantities, how much more easily affected must those cells be which are endowed with the irritability which a diseased state confers upon them. We have indeed entered upon a new, important, as well as vastly interesting chapter in our knowledge of life processes, and one which is pregnant with deep relationships to the science and art of Therapeutics of the New School.

It has been well said that every great advance in the Sciences consists of a vast generalization, revealing deep and subtle analogies. Hahnemann's discovery may, I think, claim to fall under this category; and one of the analogies which has come to light, chiefly within comparatively recent years, is the fact that the law of cure by similars extends into the realm of physical therapeutics.

It may be said with truth that in the whole past of the history of medicine there is scarcely one, if even one can be found, of the various physical methods of cure which has not been used on the basis of this law of likes curing likes.

Heat for allaying fever, or inflammation, or for overcoming shock; cold for frost bite; gentle exercise and manipulations for fatigue or nervous exhaustion, all these are examples of this, and can be shown to be based upon the law of similars. In the case of electricity, the strong Faradic current will produce neuralgic pains, whilst a weak dose of the same will relieve or cure this malady. In dealing with paralysed muscles, the late Dr.

Meyhoffer discovered a fact which is clear evidence of the truth of the homœopathic principle. He says: "As is well-known, the action of the positive pole of the galvanic pile is centripetal and stimulating, that of the negative pole is centrifugal and sedative. The common practice in Electro-therapeutics is to use the centripetal current for paralytic affections, and the centrifugal for convulsions. Here lies the reason for the frequent failures of galvanic treatment, as the reverse proceeding is the only correct one." He was led to this knowledge by treating a case of writer's cramp, for when he applied three or four times the negative pole on the head and the positive one on the cervical vertebræ, it was without the smallest effect, whereas, when he reversed the position of the poles, the effect was immediate; that is to say, after exposing the hand of the patient for four or five minutes to the ascending current, the cramps increased and continued violent for about one-and-a-half hours, after which the hand was almost completely free from cramp, and a second application restored the function entirely. Later on, he found that this proceeding acted in a similar way in chorea or other convulsive affections.

The homœopathic action of radio-active substances such as *Radium*, and also of X-rays, is firmly established. Both of these agents produce changes graduating from simple inflammation up to widespread destruction of the tissues to which they have been applied, and, in the case of X-ray—and probably time will show that it is the same with *Radium*—later changes may occur in the affected parts leading to the production of cancerous growths.

It is common knowledge that both these agents are used therapeutically to cure the very conditions which they produce when administered in excessive doses.

It is difficult to see how any one can doubt the validity of the law of similars when viewed in the light of such facts as these.

So-called "ionic treatment," such as is carried out by driving metallic or other "ions" into the tissues by means of a current of electricity, will also act in accordance with the same law.

Take, for instance, the metal zinc. The ions of this substance when driven into the tissues by a very strong current of electricity, will destroy to a considerable depth the parts which have been exposed to its action. I have lately had an opportunity of showing that a small dose of the same treatment will act as a stimulant to deceased tissues, causing ulcers, and long-standing sinuses to heal up rapidly, even after only one application. I should like to give an instance of this, as I am not aware of a similar case having been previously recorded in medical literature.

I was asked by my colleague, Dr. Burford, to treat with Zinc ionisation a patient of his from whom he had previously very satisfactorily removed by means of *Radium* a large and otherwise inoperable cancer of the breast.

The deep and extensive ulcer which was left after the mass of the growth had come away refused to heal under any kind of application, and was, moreover, causing a great deal of suffering from constant pain in the wound.

Dr. Burford asked me to try what the treatment by Zinc ionisation would do for the patient, and though I was somewhat doubtful whether it would accomplish anything, it was decided to give it a trial. Such was the sensitiveness of the parts that even after the application of cocaine the patient could not bear more than three minutes application of a three milliampère current with a weak Zinc sulphate solution.

So small was this dose that I did not expect any result to come from it, and I gave it as my opinion that more applications would be necessary. In this, however, I was mistaken, for the ulcer forthwith commenced to heal, and the pain lessened rapidly, and without any further application the wound cavity completely closed up. It speaks much for Dr. Burford's skill in the treatment of the original growth, that nearly two years later the patient reported herself in excellent health and free from any local trouble.

A subject that would well repay close investigation is the relationship which Hahnemann's theory of chronic diseases bears to the facts which present day science has put at our disposal.

Hahnemann's idea that chronic diseases were dependent upon one or other of what he termed miasms, and which he classified as syphilis, psora, and sycosis, is not so fanciful as the old school practitioners have endeavoured to make out. It is probable that under the head of sycosis more than one form of infection is included, and that a new classification is needed but I hardly think that anyone can at the present day doubt that a vast number of chronic diseases are due either directly or indirectly to the entrance into the system of poisons manufactured by living organisms which find a suitable soil in the body, and that they can leave behind effects which become manifest years after the primary action of the poisons has ceased. We need only recall the vast inroad made on the general health, as well as the appearance of joint troubles, and the disorganization of the blood which are so frequently caused by the absorption of the poisons generated by the germs which find a lodgment in the teeth and gums in cases of the disease called pyorrhœa alveolaris.

But clearly as was Hahnemann's genius shown by this acute generalization regarding chronic diseases, it was probably even yet more vividly manifested in his discovery of the remedies suited to each particular miasm. Whatever value may be attached to his theory of the miasms, we have here at any rate solid ground to tread on, for it has been proved over and over again that the remedies he indicated are of the greatest service in these morbid states.

This discovery was one which he made absolutely independently of any aid from medical science of his day. It was due entirely to his own particular method of experimenting, *viz.*, the testing of the effects of drugs upon the healthy human body. It was in this way that he obtained his first inkling of the homœopathic law, and all his subsequent knowledge of the curative action of remedies. And it has been truly said that on the theoretical side, he approximated drug healing to the pure sciences, for by instituting experiments on the healthy body he obtained a knowledge of each drug *in terms of human symptoms*,

thus making each,—naturally, applicable to man for the cure of those particular symptoms which the drug induced.

Under the illumination of this beacon light which Hahnemann lit for us, we understand the *rationale* of the law of similars. We see that each drug acts on the diseased tissue because it has affinities with that tissue. It is as George Herbert says in his poem on Man :

Nothing hath got so far
But man hath caught and kept it as his prey ;
His eyes dismount the highest star,
He is, in little, all the sphere.
Herbs gladly cure our flesh, because that they
Find their acquaintance there.

The proving of our remedies, by which, of course, is meant the testing of the action of drugs upon the healthy human body, is a subject which must always be of the deepest interest to every member of our school.

This system of proving remedies is nearly a monopoly of homœopathists. There are, indeed, a few recorded instances of this method of ascertaining the action of drugs on the human frame having been utilized before Hahnemann's day. It is stated that Mithridates, King of Pontus in Asia Minor, who lived from 120-63 B.C. instituted experiments on himself and criminals in order to ascertain the action of certain poisons, but whether this was for therapeutie or other purposes does not transpire. In this, at any rate, Mithridates showed himself a true scientist in that he did not hesitate to experiment on his own body, and thereby set a worthy example to future generations.

Fifty years before Hahnemann, Haller had insisted that to know what a drug could do in sickness it was essential first to test it upon the healthy. This would seem to be a very obvious conclusion, but it does not appear to have been accepted or put into practice, to any extent, before Hahnemann's time, or even since then, except by his followers.

Considering that the greater number of the remedies we now use were proved about a hundred years ago, and that since that

time the art of diagnosis of disease has undergone a change which may well be classed as revolutionary, it is not surprising that a general feeling has arisen as to the desirability of re-proving, under the light of modern methods of diagnosis, the leading constituents of our *materia medica*.

From time to time sporadic efforts in this direction have been made both in this country and in America. In the latter, it appears that provers have occasionally gone to work in a very thorough way, for we read of certain provers of *Arseniate of Quinine* whose health was ruined by the hardihood wherewith the investigations were prosecuted; and also of a case in which, about the middle of the last century an experimenter actually died from 'excessive doses of *Gelseminum* taken in the course of a proving, and the physician under whose charge the investigation was carried out was committed for trial, but fortunately obtained an acquittal, though with much difficulty.

Within the last four or five years re-provings have been made both in this country and in the United States. In the latter, under the ægis of the Ophthalmic, Otological and Laryngological Society with Dr. Bellows of Boston as President, and in this country by a committee of the British Homœopathic Association, who employed provers both paid and unpaid, and regular and systematic examinations of their workers were made by a staff of experts who noted the results of their examinations on printed forms, which results were subsequently collected and edited.

In the United States local boards of provers under a local director were established. The provers were paid, and daily examinations of the provers were made. Many other precautions to ensure thoroughness and accuracy were taken. After three years of labour eleven boards of provers finally sent to Boston the record of tests made by one drug on fifty-one persons.

So far as the American results are concerned, he will let Dr. Bellows speak. Briefly, he declares that the method adopted will have to be abandoned as impracticable. "The weak spot," he says, "is the reliance on the busy physician. Men capable of doing this work are busy men, and the difficulties in the way of

continued services finally become insurmountable. It is not a work to be undertaken by the profession at large. Nor is it a work to be carried on by medical colleges under present conditions. Volunteer provers, as a rule, are not a success, and it is doubtful whether it would be wise to demand that the proving of drugs should be part of the curriculum. While a college may be of great assistance in drug proving, that is not its primary object, and unless it had a huge endowment, and could afford a separate department with salaried officials its efforts would be mostly sporadic."

Dr. Bellows continues: "To my mind there is only one way in which further drug proving can be done as it should be done to meet the demands of modern times, and that is an institution founded and equipped for this purpose. What we need now, and what we must have sooner or later if this work of re-proving our *materia medica* is to go on to a successful completion, is an Institute of Drug Proving. Until we do have such an institution the best work which can be done by individuals, or by proving boards, or by Colleges, will prove inadequate to the requirements which modern methods in other lines of work lay upon us. In my judgment, we might almost better conserve our energy and concentrate our forces, so far as systematic re-proving is concerned, until such time as an Institute of Drug Proving is within our reach, rather than struggle with the problem and make ineffectual efforts to accomplish the well-nigh impossible with the means at our command."

These conclusions of Dr. Bellows apply not only to the subject of re-proving but to every branch of the investigation of our science, but more especially to laboratory work. It is impossible to expect satisfactory results, or results which would appeal to, or convince, the scientific mind of to-day, which have not been born of careful and systematic experiment with all modern instruments and methods. And this cannot be done without properly equipped institutions, and funds sufficient to pay fully qualified workers. The efforts which the British Homœopathic Association has made in this direction are praiseworthy, but it

has been hampered in the past by lack of sufficient funds, and it is to be sincerely hoped that some munificent donor will come forward to make up for this deficiency.

So far as re-provings are concerned, I do not think that many of us in this country will be found ready to dispute what Dr. Bellows has said. One thing is quite certain, *viz.*, that to get really satisfactory provings no expense should be spared; sufficient funds must be forthcoming to pay for the skilled work which is required, and that such a work is really necessary I believe will be freely admitted by those who are acquainted with the needs of our body. We have a *materia medica* which has in the past, it is true, enabled us to put into practice with very considerable success a great therapeutic principle, but it is doubtful whether we have one which would meet the requirements of modern science; and, as has been truly said, it is our business to put it into such a shape that, as a scientific work, it will commend itself to scholars everywhere. Such a *materia medica* would be investigated, and such an investigation would quickly show the wide scope of the homœopathic law.

I have now touched upon some of the problems which require elucidation, and the lines upon which researches may profitably be prosecuted.

Hahnemann, as a philosopher and practitioner, was generations in advance of his day, and he broached theories which the state of science of his times gave him no means of proving.

Such has been the lot of most advanced thinkers of all ages. Were anyone to arise at the present day with such a mentality as Hahnemann possessed, he would find to hand a vast storehouse of knowledge in which to labour and farther the work of his illustrious predecessor. It is our duty, as well as our privilege, to endeavour to continue the work thus begun, and, in the light of present day knowledge, and with the amplified means at our disposal to discover new facts as well as to discard what is erroneous, and to establish what is the truth in those teachings which the genius of Hahnemann has handed down to our generation.—*The Homœopathic World*, December 1, 1913.

REVIEW.

- (1) *Skin Diseases in General Practice.* Their recognition and Treatment. By Haldin Davis M.B., B.Ch., B.A. (Oxon) F.R.C.S., (Eng.) M.R.C.P. Henry Frowde; Oxford University Press. 1913, Price 15 Shillings net.
- (2) *The Diseases of the Skin.* By Willmott Evans, M.D., B.S., B.Sc., F.R.C.S. University of London Press. Price 10 Shillings 6 pence net.

Of all the diseases that flesh is heir to the diseases of the skin are the most obstinate and most difficult to diagnose. The systematic study of the skin diseases began perhaps with the English Dermatologist Willan, whose work was published in 1808, London, in a quarto edition. Fothergillian "gold medal was awarded, to him in 1790 by the Medical Society of London, for a Classification of Cutaneous Affections." After that came the monumental work of Ferdinand Hebra. His work was translated into English and published by the New Sydenham Society in five Royal octavo volumes. Since the time of Hebra other volumes have been published following the footsteps of the master mind. The two volumes under review are excellent treatises on the disease of the skin.

(1.) Dr. Davis's book is an outcome of laborious scholastic life. The author felt difficulty in his student life and he was unable to understand properly even those diseases of the skin which were not uncommon. He looked for help in the text books but none of them came up to his wishes. He found that the classifications were adopted upon etiology. This did not seem satisfactory to the author. He therefore thought that a book in which the diseases of the skin are topographically arranged will be more useful, and upon that line the book was written.

The book is written in excellent style and the arrangement is rather natural and gives every facility to the learner as well as to the practitioner, of grasping the individual diseases.

Much prominence has been given to the treatment and attempt has been made to lay down the lines upon which a case should be attacked. Large number of illustrations have made the book a very attractive one. The coloured plates are exceedingly nice. Students going up for the higher examinations in medicine will find in it ample help.

(2.) Dr. Evans' book has nothing peculiar to attract attention. The arrangement of the diseases is the same as has been followed by previous authors.

The illustrations are rather few. There cannot be too many illustrations in a book on Skin Diseases. Each disease has been thoroughly treated, its Definition, Symptoms, Etiology, Pathology, Diagnosis, Prognosis and Treatment has been given. It is indeed a good hand-book for students and general practitioners.

Irritability. A Physiological Analysis of the General Effect of Stimuli in Living Substance. By Max Verworn, M.D., Ph. D. Professor at Bonn Physiological Institute. Henry Frowde, Oxford University Press, London, 1913. Price 15 Shillings net.

The name of the learned author is quite a guarantee for the high quality of work. This book is the ninth of the series of Silliman Memorial lectures. "In 1883 a legacy of eighty thousand dollars was left to the President and Fellows of Yale College in the city of New Haven, to be held in trust, as a gift from her children, in memory of their beloved and honoured mother, Mrs. Hepsa Ely Silliman. This Yale College was requested and directed to establish annual course of lectures designed to illustrate the presence and providence, the wisdom and goodness of God, as manifested in the natural and moral world." These memorial lectures are master-pieces delivered by master minds—the present volume is a store house of information on the subject and contains the original researches of the author carried in the Physiological Laboratories of Jena, Göttingen and Bon. In the preface the author says that "the physiologist the zoologist, the botanist, the psychologist, the pathologist, have to deal, day in, and day out with the effects of stimulation on the living substance. No living substance exists without

stimulation. Experimental biological science employs artificial stimulation as the most important aid in the methodic production of certain effects of Stimulation..... Although countless results of individual effects of stimulation have been studied, the attempt has never been made to establish a general physiology of the laws of stimulation and consider it as an independent problem. All these results I have endeavoured to combine and elucidate in the following lectures." The author gives us the history of the subject and brings us so far back as to the period of *Francis Glisson* (1597—1677) who was a member of the *Collegium Medicum* in London and at the same time Professor in Cambridge. Francis Glisson is considered as the founder of the doctrine of the irritability of living substance. From Glisson onward he has traced the history till we are brought in contact with Semon, Hering and Haeckel. In the second chapter the author deals with the nature of Stimulation and at the end of this chapter he shows that "the nervous impulses which act as momentary stimuli, are also in the course of time indispensable vital conditions. Without them the muscle would gradually become atrophied from inactivity." The definition of stimulation in short is "*Stimulus is every alteration in the external vital condition.*" From this we will find that "a systematic employment of stimulus is, therefore, the experimental means for the research of life." In the third chapter the characteristics of stimuli are considered. Quality, positive and negative alterations of the factors which act as vital conditions—the threshold, sub-threshold sub-maximal, maximal and supermaximal intensities are considered in this chapter. Weber and Fechner Law, Nernst laws have been also clearly dealt with. Then under the head of General Effect of Stimulation in the fourth chapter the author has clearly discussed the various effects of Stimulation and in the subsequent chapters the process of excitation, conductivity, fatigue, interference of excitation and the process of depression have been thoroughly discussed. The book is a masterpiece and contains all the information up-to-date on the subject. The subject of irritability is becoming more and

more important as it is the keynote of all vital phenomena and in future the most intricate problem of life may be solved by the study of this subject only.

Le Visage Correction des difformities Par le Dr. M. Lagarde ;
Bibliotheque Larousse, Paris. Prise 1 Fr. 20 net.

It is a small treatise which deals with facial deformities by surgical means. It is a nice little book with several nice illustrations—and will be of great help to them who understands French. Special attention has been given to the *prothese paraffine* or the filling up and rounding out of the cavities by injections of paraffin—Full description of the process has been given.

Aids to Surgery. By Joseph Cunning M.B., B.S., F.R.C.S.,
Bailliere, Tindall and Cox. Price 4 Shillings net. London.

This is the third edition of the work. In this edition the author has incorporated almost all the advances which have been made in Surgery since the last one was written. Messrs. Bailliere Tindall and Cox's aids series are exceptionally good for students going up for the higher or lower examinations.

A Companion To Manuals of Practical Anatomy. By E.B. Jamieson M.D., Senior Demonstrator and Lecturer on Anatomy, University of Edinburgh. Henry Frowde and Hodder and Stoughton. London, 1913. Price 6 Shillings net.

This is an excellent Companion to the Manuals of Practical Anatomy. Ready reference can be obtained from it during the time of examination. These books are generally intended for students going up for their examinations. They can never serve the purpose of Manuals. Students appearing for the Practical Anatomy examination will find in it a great help.

EDITOR'S NOTES.

Homœopathic Babies Win.

The Iowa Homœopathic Journal is authority for the statement that the majority of prize winners both this year and in 1912, at the Iowa State Baby Show were either the children of homœopathic physicians or patients of homœopathic physicians. The first prize in the 1913 show was taken by the little daughter of Dr. C. V. Page, of Sheldon, with a record score of 98.9 per cent, the highest score ever received in any contest held under the auspices of the American Medical Association or the American Baby Health Contest Club."—*The North American Journal of Homœopathy*, November, 1913.

The School Doctor in Japan

Since 1891 there has been attached to the Ministry of Instruction of Japan a medical councillor whose function it is to deal with questions relating to the hygiene of schools. In 1896 a commission composed of a number of eminent persons was appointed to draw up a scheme of legislation on school hygiene uniform for the whole country. In consequence of the recommendations of this commission a law was passed in 1898 which brought the school doctor into existence. In 1908 there were in Japan 11,868 schools with 6,459 doctors. To-day the proportion remains about the same. By special concession communes with a population less than 5,000 are exempt from the necessity of having a medical officer to themselves. The work of the school doctor in Japan would not seem to be hard, since three-fourths of them have only one school to attend, a third have two, while the rest have three or more. It is estimated that a school doctor has under observation not less than 500 pupils. Every communal school in Japan has no fewer than twelve classes. The medical officer has to visit every year in April all the pupils, examining them minutely, and must report on official forms the results of his examinations to the Government. Moreover, he has to keep a watchful eye to prevent the spread of infectious diseases, and to see that the buildings, desks, and so forth are kept in a good sanitary condition. Great attention is paid to physical education in the Japanese schools. In the communal and middle schools three hours a week, in the upper schools for girls three to six hours, and in the training colleges from two to four

hours are given to gymnastics. In the lower classes gymnastics are represented by games. In the upper classes they assume a military character, and in these classes sports are also taught, among them being swimming. From a very remote period great attention has been given to physical education in Japan. The Japanese are very fond of sports, manual work, and music. In the higher schools for girls hygiene and physiology are included among the courses of natural science. In the training colleges the students must write essays on school hygiene. In the elementary schools there are readings on the importance of gymnastics and physical exercises for the preservation of health. There is no corporal punishment, and no religious teaching, moral instruction taking, moral instruction taking its place. In addition to Sundays, Japanese school children have ninety days' holiday in the year, divided into three periods. In the communal schools a rest of fifteen minutes is allowed for every hour of work.—*The British Medical Journal*, December 20, 1913.

Dietary of the Ancient Hebridean.

At a recent meeting in Edinburgh of the Society of Antiquaries of Scotland, the results of an expedition organized by Mr. A. Henderson Bishop and Mr. Ludovic Mann, Glasgow, last summer, by permission of Lord Strathcona, to elucidate various problems connected with one of the most distant horizons yet discerned in Scotland, were presented. It had long been suspected that on the west shores of Scotland traces could be detected of a civilization which existed somewhere between the later phases of the older Stone Age and the earlier phases of the younger Stone Age—that is, between the Palaeolithic and the Neolithic periods. With the exception of two isolated relics, England, Wales, and Ireland had yielded no vestiges of that interesting “overlap” period. A few sites, however, had been detected in the Hebrides, and two, if not three, on the mainland of Scotland. This demonstrated that there was no hiatus or break in the continuity of the human occupation of the British Isles since Palaeolithic times. The island of Oronsay was selected for the operations of the expedition, as it was thought likely to offer the richest field for investigation. A large quantity of the material taken from the sites is at present under examination

by specialists at South Kensington. The dietary of the Oronsay man was lavish and varied—much more so than that of the average present day Britisher. The report of the botanists had not yet been completed, and the vegetarian taste of these Hebrideans had not yet been clearly brought out. Hazel nuts occurred plentifully in the kitchen refuse. Some twenty-four species of molluscs were apparently gathered and eaten, and some dozen species of fish stocked their larder. Of wild fowl the ancient Hebridean had an abundance, including the extinct great auk. It was remarkable that on Oronsay traces of feasts on the flesh of swine and red deer had been found. This meant that the Oronsay hunter followed the chase on the larger islands, if not on the mainland, at a distance of many miles across the water from his own island. The characteristic weapon of the period was the flat-headed harpoon of bone or horn, with several barbs. And yet, of the many hundreds of his implements which had been discovered, there was not one at all suited to the excavation of canoes from a single log. Perhaps, therefore, his vessels were made of skins stretched on frames of wickerwork. It was likely, then, that the coracle type of craft preceded in the British area the dug-out canoe. It was clear that he lived a communal life, and traces of post-holes gave some indication that his dwelling house was a kind of wigwam or cave-like structure erected against the face of sloping ground. Everything pointed to the period being of immense antiquity, and it is thought a key has been obtained which may solve the problem of the chronological valuation. It would seem that the period was at least 20,000 years old.—*The British Medical Journal*, December 20, 1913.

From Plato to Sir James Barr.

“The science of eugenics has the positive aspect of encouraging the multiplication of the morally, intellectually and physically fit, and the negative aspect of preventing further degeneration by discouraging or preventing the multiplication of the unfit.” We quote from a recently published address delivered by Sir James Barr before the Sociological Society of Sheffield University. In taking for his subject “The Positive Aspect of Eugenics,” Sir James has displayed characteristic courage; it is an aspect whose dangerous possibilities are evidently realized by the majority of eugenic propagandists, for

we hear very little about it. No engenist has yet been bold enough to demand with Plato that "those of our young men who distinguish themselves in the field or elsewhere should receive along with other privileges and rewards, more liberal permission to associate with the women, in order that, under colour of this pretext, the greatest number of children may be the issue of such parents." Plato makes Glaucon agree with Socrates that, granted the undeniable fact of the amenability of human beings to the same laws which govern purity of breed in dogs or game birds, it follows that "the best of both sexes ought to be brought together as often as possible, and the worst as seldom as possible, and that the issue of the former unions ought to be reared, and that of the latter abandoned, if the flock is to attain to first-rate excellence." The logic may be irrefutable, but, since its enforcement would make short work of existing matrimonial sanctions, it is as yet for the most part diplomatically ignored by those who are so zealously endeavouring to popularize the eugenic ideal. It would be a mistake to represent Plato as a supporter of "free love;" the transient unions which he prescribed for member of his ruling caste were to be subject to the approval of the magistracy, and their consummation preceded by a religious ceremony. But the revival of his proposals would hardly be conducive to that active interest in the eugenic movement on the part of leading members of the Anglican Church from which Sir James Barr derives gratification at present. Needless to say, there is not a word in Sir James Barr's address which could bear the construction of a covert attack upon our monogamic institutions. Indeed, he expressly repudiates any such intention. He contrasts the deplorable record of the Jukes family in America, with its 1,200 degenerate descendants of one reprobate father, with that of the 1,394 good citizens who traced their descent from the Rev. Jonathan Edwards, divine and metaphysician, which included 13 presidents, 64 professors, 100 clergymen, 75 officers, 60 doctors, 50 authors, 180 judges, advocates, or solicitors, 80 civil servants, 3 senators, a vice-president of the nation, many State governors, members of Congress, and mayors, and apparently not one black sheep. He deplores the wasted opportunity of the recent "feeble-minded Act for the feeble-minded," which he thinks unlikely to diminish the output of mentally-deficient children by 5 per cent.,

"whereas radical and less expensive measures might lessen the output by 50 to 80 per cent." So far, in fact, as we can judge, he is content, on the negative side, to minimize the undesirable births, and, on the positive, to encourage in various ways the desirable. "We want," he says, "to raise the average physique and intelligence of the community. . . . Our selective death-rate has been largely abolished, and now we wish to establish a selective birth-rate." As to the desirability of this moderate aim all reasonable persons must agree; but the differences of opinion become acute when the question how far compulsion as distinct from moral suasion is to be the means of attainment comes to be decided. On this point Sir James is among the stalwarts; his contempt for the results of legislation in the past seems in no way to have shaken his faith in its future possibilities. But, in this respect again, some eugenists would, we presume, be less moderate; they would demand not merely better but the best possible births, and at any cost to existing institutions. "The illegitimate or chance child, the result of strong passion rather than of subdued love, is often," says Sir James Barr, "an exceptionally able individual," and no doubt he could quote many instances. Was not Leonardo, one of the ablest men who ever lived, a case in point? With such questions as these we, to whom the public naturally and rightly turns for guidance in these matters, are likely to be faced more and more insistently in the near future. All the more grateful should we be to Sir James Barr for calling attention to the need of making up our minds as far as possible, in the light of our as yet very imperfect knowledge, as to the line we mean to take, and the advice we mean to give. It needs more courage than most of us can boast to venture into the arena of a controversy so fraught with revolutionary promptings.—*The British Medical Journal*, February 21, 1914.

Horse Meat.

Sixty thousand horses were eaten in Paris in 1911. The ordinary retail price is 3½ cents a pound. The meat is somewhat dry and insipid, but resembles beef. Smoked and shaved, it appears and tastes like a superior quality of dried beef. It contains slightly more glycogen than most fresh meats.—*The Medical Advance*, November, 1913.

CLINICAL RECORD.

CASES FROM PRACTICE.

R. S. STEPHENSON, M D.

Tuberculin.

Several months ago Mrs. W. visited me and stated that over twelve years previously I had cured with medicine her husband, a farmer, of *lupus*. She asked me to look at her face and I found the same trouble had attacked the tip of her nose. Her local doctor had made the same diagnosis three months previously and had treated her with X-ray applications. She had improved somewhat, and was advised to wait for some weeks, and then take another course of X-ray treatment. She wished to know if she could take the remedy which had cured her husband.

On reference to my case book I found the remedy was *Tuberculin*—Heath and Burnett. The sore was bluish, larger than a threepenny piece, and inflamed at the edges. She received *Tuberculin* a few doses in high dilution and plenty of *Sac lac*.

In a week there was marked benefit, and in three weeks there was no trace of the trouble left. She was and remains completely cured.

Tuberculin Bovinum (Kent) is the better remedy for the treatment of enlarged glands, of adenoids and of hereditary consumptiveness. Cold sweat of the hands and tubercular ulcer of the skin of the wrist was cured by it. For obstinate ringworm I prefer the preparation of Heath and Burnett.

ECZEMA.

Mrs. X.—florid, fair, stout, over sixty. Has always had a sensitive skin. For ten years has had treatment for eczema. For three years her face has been so bad; she has not left the house. The face is all red and raw and weeping; so that she is stuck to the pillow every night. She is sleepless from itching. Has had lotions and pills and ointments, prescribed by physicians, and endless patent cures prescribed by numerous friends. Her general health is good, except that she gets attacks of gastritis and bronchitis at times. My treatment was just as successful as my predecessor's until one day she came down with a bad attack of gastritis. Temperature 103°. Tongue milky white. Cause: going from a warm bed into a cold

bathroom on a frosty morning. I then remembered that she had horny soles of feet, that she was easily chilled, yet could not stand overheating, and her anxious and lachrymose temperament like *Pulsatilla*.

I saw then that all her troubles were gouty and that the remedy for them was *Antimonium Crudum*.

She has been on this remedy with variations to *Pulsatilla* for nine months and finished off with *Sulphur* 1^m; with triumphant cure of her eczema; with return to good digestion, and better health in every way. It is interesting to note that the *Sulphur* was no use to her until after the *Antimonium Crud*, had finished its action, then it came in most usefully to relieve a troublesome itching about the chin, and sleeplessness, and to complete the cure.

Mr. D. wrote complaining of what his medical men called *Eczema* of palms of hands due to a rheumatic state of the blood. First red patches formed, which became very dry with cracks in the skin and itching. Also itching and tenderness of skin of face as if sunburnt. After prescribing *Rhus* and *Sulphur* with no benefit. I learnt that the symptoms first appeared thirty years before, after rowing hard in a boat race.

R. *Radium* 30. A month later he reported itching lessened, but very annoying at times and desquamation of palms of hands.

R. *Arnica* 30. Six powders and *sac. l.*, which cured.—*The Homoeopathic World*, December 1, 1913.

SOME BRYONIA CASES.

By A.H. RODGERS, M.D.,

The following cases are taken from notes that are fragmentary but they illustrate so well why homoeopathy makes its appeal to the physician who prescribes and to the patients benefitted that I venture to offer them with brief comments.

Case 1. Mrs. A., aged 75, for years a semi-invalid has been confined to her bed for the past two years with the infirmities of age and lowered mentality. About a year ago she had these prominent symptoms: Nausea and vomiting, worse from the least motion, even turning the head, abnormal appetite, thirst for cold water; constipa-

tion, no action of the bowels without enemata; ideas of persecution, seems in a strange place, "they will not let me go home." Bryonia, low and high, was used with varying success for several weeks. Nux and Sulphur were used occasionally. Finally, bryonia, m, one dose, repeated twice at intervals of ten days, and placebo was used with the cleaning up of all symptoms. This case illustrates better than I have told it, the utility of placebos and that the continued use of the indicated remedy may in some cases interfere with its curative action. During the past year she has needed no medical attention at all, her mentality has improved appreciably and her physical life is normal, even though she is confined to her bed.

Case 2. Mr. B., aged 25, a tramp, typhoid fever, Corning Hospital. When admitted, he presented the following symptoms: Headache, worse from motion; desire for cold and acid drinks; sweat worse during sleep; stools involuntary during sleep; distended abdomen; twitching of face; dicrotic pulse. Under bryonia 3x, 30 and 200, the course of the disease became mild and uneventful. I mention the case merely to state that, because of the beneficent action of bryonia, he needed relatively little attention from the nurses; for example receiving from them a daily cleansing bath instead of the frequent antipyretic cold baths which other typhoid cases in the same ward had, at the order of their old school physicians. It is therefore not surprising to hear the comment from a hospital nurse, "if I ever have typhoid fever, I want to be treated homœopathically."

Case 3. Mr. C., aged 60, manufacturer, once a homœopathic medical student. Of this case I can find no notes but I have a clear recollection that he was suffering from a severe lithaemic headache and that the symptoms called plainly for bryonia. The relief following its use brought forth the surprising statement, "that is the first time a homœopathic prescription ever had any effect on me."

Case 4. Mr. D., aged 45, grocer, had slight attacks of epilepsy in youth and but one other attack in manhood. Had a convulsion lasting a half hour coming on in sleep. This convulsion was preceded and followed by knife-like pains in the region of the kidneys, especially the right, worse on motion, at night, on turning over in bed, lying on back or abdomen, urine strongly acid, odour like horse urine and containing calcium oxylate crystals in abundance; eructa-

tions of sour liquid; worse after meals. Bryonia, 30, every two hours for one day, was prescribed. Improvement setting in at once, no further medicine was taken.

Case 5. Mrs. E., aged 70, has a multiplicity of ailments, chief of which is chronic nephritis, with cedema of face worse in morning; urinates frequently at night; has pain in spine, especially in region of kidneys; indefinite rheumatic pains; chronic constipation; vertigo worse looking at moving objects, better lying down. Two facts are associated with her in my mind; she always tries a long string of home remedies; liniments, mustard plasters, sweet spirit of nitre, sodium bicarbonate, rhubarb and other cathartics and many others too numerous to recall, before sending for a physician; and bryonia has so far always relieved her.

Case 6. Mr. F., 45, grocer. Prostrating, occipital headache with nausea and vertigo, worse in hot weather, on awaking, stooping; relieved lying with head low, by quiet. I can remember to have prescribed bryonia, 30, for him, four times in the past ten years. In the last attack he sent a clerk "for more of that same medicine." In each instance the relief was prompt.

Case 7. Mr. G., aged 60, mechanic. Chronic rheumatism. In March, 1912, he presented this picture: Dull heavy pain with occasional cutting in left chest wall, extending to shoulder, worse on deep breathing, change of position, lying on back; better lying on right side; headache about eyes; dreams of work and of falling. In my notes bryonia is underscored as being indicated in spite of some of the symptoms. Bryonia 3x, relieved. In August 1912 he returned with the following new series of symptoms, cramps in right leg, worse crossing the leg, rising from seat, lying on right painful side; better lying on left side. Rhus 200, was decidedly helpful, enabling him to return to his work. On comparing the two sets of symptoms, it is evident that either rhus was needed to complete the cure or that it would have proven curative in the first place.

The report of these cases lacks the thoroughness which more complete notes would have given them but they at least illustrate, what I started out to show, the mildness, promptness and thoroughness of the curative action of drugs homœopathically applied.—*The North American Journal of Homœopathy*, November, 1913.

Gleanings from Contemporary Literature.**THE SCIENCE OF CURÉ.****A POSITIVE METHOD FOR THE RADICAL CURE
OF DISEASE.**BY **W. H. FREEMAN, M. D.****Preface.**

Every homœopathic physician is constantly receiving requests for information as to the differences between homœopathy and all other forms of medical treatment. The impossibility of giving a satisfactory and comprehensive reply to everyone so inquiring must be apparent.

This little pamphlet is designed to meet and answer the most frequent and important questions that naturally occur to the layman. It is with the hope that the information herein contained may prove valuable and enlightening to many seekers for improved health that these pages have been prepared by the writer.

INTRODUCTION.

Homœopathy is a system of treatment based on the law of nature that "*Like cures like*," as expressed by the homœopathic motto, "*Similia similibus curantur*."

Careful and extensive experiments have proved that this is the quickest, surest, safest, and only scientific method for the use of drugs in the treatment of disease.

By this method each patient receives his individual, specific, curative medicine, selected upon the basis of an exact similarity between the symptoms of the patient and the symptoms which the medicine will cause when given to a healthy person in large doses.

The reason for this, contrary to what is generally believed, is that drugs are curative only for symptoms and diseased conditions like those which they can cause. Medicines used in this way not only give quick relief, but the relief is curative and lasting; and owing to the special way in which such medicines are prepared, poisonous drug action never occurs.

SPECIAL ADVANTAGES.

Among the principal advantages of homœopathic treatment are :—

1. Better control of disease, and consequently less pain and discomfort.
2. Greater freedom from complications and bad after-effects.
3. Large saving in doctor's, nurse's and druggist's bills, as well as great saving of time otherwise lost from work.
4. Impossibility of the formation of drug habits.
5. Comparatively certain cure in nearly all forms of disease, and improbability of the development of cancer, tuberculosis, Bright's disease, diabetes, or other serious forms of disease later in life.

6. Better subsequent health of patients who are treated homœopathically, and enjoyment of a longer life than would otherwise be possible.

* * * * *

To unfold these advantages more in detail :—

In acute illness correct homœopathic treatment either stops the course of the disease within a few hours, or causes it to run a much milder and shorter course than is ever possible when not treated at all, or when treated by other methods.

In the more severe forms of disease pain and discomfort are markedly less ; recovery is quicker ; convalescence is more thorough ; and the chances of escaping an untimely death are, at least, three times better with homœopathy than with other methods.

As a result of the quicker control of sickness, the earlier recovery, and freedom from complications, the expenses due to sickness are always markedly less with homœopathy than with other forms of treatment.

Cancer, tuberculosis, insanity, chronic kidney trouble, and other fatal forms of chronic disease, seldom or never develop in persons who have previously had the benefit of homœopathic treatment. The reason is that the tendencies toward such diseases are previously driven out of the body by correct treatment applied to the lesser ailments.

On the contrary, by the customary forms of medical treatment, the various illnesses of childhood and adult life are seldom, if ever, *really* cured ; and, nearly always, the seeds of chronic disease are driven back into the body, where they germinate and finally develop into some one of the serious ailments under discussion.

The foregoing applies especially to the local suppressive treatment of diseases of the skin and mucous membranes, by which eruptions and discharges are dried up or suppressed with strong ointments, injections, douches, etc. Such conditions are nature's attempt to get rid of internal disease by forcing it out of the body to the surface, where it will be least harmful.

Naturally, patients dislike such symptoms, and usually prefer local treatment, which will dry up the eruption or discharge and drive it back into the body again. Getting rid of an eruption or discharge in this way, however, is, in its ultimate results, analogous to closing a city's sewer outlets.

Everyone knows the serious results which follow the suppression or driving inward of the eruption of scarlet fever or measles ; and yet seemingly but few have the foresight to perceive that the penalty exacted by nature is just as certain in all other forms of disease. The only difference in results is in the time of their appearance, which is governed by the rhythm of the disease. In quick, actively progressing diseases, like scarlet fever, the bad results of suppression appear quickly. In a chronic, slowly progressing disease, like eczema, the bad results may not be noticeable for weeks or months. Otherwise there is no difference ; the ultimate results are just as bad and just as certain in one instance as in the other.

The forcible lowering of high fever with ice baths or strong drugs, and the breaking up of colds with large doses of quinine, are also suppressive in character and always harmful. Recovery following such measures is only an evidence of the strong recuperative powers of the patient, and health is often seriously and permanently damaged by such treatment. The "scattering" of inflammations and swellings with local applications of iodine, camphorated oil, and other strong drugs is also harmful, and just as foolish as would be the scattering over an entire farm of the weeds in one corner of a field.

With correct homœopathic treatment, such eruptions and localized ailments are not suppressed or driven inward by local measures; but disappear as a result of internal medication, and because the internal disease which caused them has been *cured*.

When comparing the quickness of action of methods, if a fair comparison is to be made, the character of the various diseases, the time of their existence, and the previous health of the patients should be taken into account. It is also essential to consider whether it is the true curative action of remedies, or only the temporary stoppage of certain disagreeable symptoms which should be compared. In a chronic ailment of several years' duration it would be foolish to expect a cure within a few hours, such as we might expect, for instance, in an acute condition like a cold in the head. If only temporary relief of pain in chronic neuralgia is wished for, a strong dose of morphine or acetanilid will stupefy the nerves, so that no pain will be felt for the time. It would be futile, however to compare the temporary, poisonous, non-curative action of such drugs with the action of homœopathic remedies which induce a lasting cure, without either poisoning the patient or risking the formation of a drug habit.

HOMŒOPATHY IN SPECIAL DISEASES.

I. *For weakness and loss of appetite.*—The homœopathic physician obtains, by careful questioning, all the other symptoms, including those of an individualizing nature, and prescribes a medicine which would cause similar symptoms. A medicine selected in this way, when properly administered; in small doses, will overcome the weakness and loss of appetite, and cure the other symptoms as well. A medicine so selected also removes constitutional tendencies to disease; and for this reason patients so treated are always much healthier afterward than before.

For conditions involving weakness and loss of appetite most physicians prescribe tonics containing strong doses of such poisonous drugs as nuxvomica, strychnine, arsenic, quinine, or iron, any apparent benefit from which is purely temporary, artificial, and harmful in the long run. Patients so treated are never in as good health afterward.

II. *For constipation or diarrhœa.*—The homœopath gives small doses of medicine, which are capable of causing, when given in strong doses, constipation or diarrhœa of exactly similar nature. When accurately selected, such drugs, in small doses, are positively curative.

For constipation, most physicians give cathartics or laxatives which relieve only temporarily, and always make the patients more constipated and more in need of laxatives than ever before. For diarrhoea, the average physician usually gives a prescription containing opium; which, while it is constipating for the time, is never really curative for diarrhoea, and is always more or less harmful.

III. *Homœopathy in children's diseases.*—Not only is there little trouble in getting children to take homœopathic medicine, but, when these are used, recovery from dangerous illness is almost certain, remarkably quick and free from complications.

One of the principal advantages, also, is that children who are brought up under the supervision of homœopathic physicians enjoy much better health later in life; tendencies to disease, which exist in every child, being eradicated by homœopathic remedies given during and following the various ailments of childhood.

IV. *Homœopathy in women's diseases.*—In no other way is homœopathy more brilliantly successful than in the treatment of diseases peculiar to women; most of the expense, discomfort and embarrassment connected with the usual forms of treatment, as well as most of the surgical operations, being rendered unnecessary.

Neither surgery nor local treatment ever removes the constitutional disease which usually precedes and makes possible the various troubles in the organs of women. On the other hand, homœopathy will nearly always cure both the constitutional disease and the local trouble without an operation. Even when an operation is imperative, such an operation does not remove the original cause of the disease. In this instance, homœopathy will generally bring about a cure of the original cause of the trouble and the patient is thereby enabled to enjoy good health afterwards, which is usually impossible with surgery alone.

V. *Homœopathy in obstetrical work.*—The expectant mother, when treated by a competent homœopath before and during pregnancy, can always be sure of a more comfortable period, an easier confinement, a quicker and more perfect recovery, with less danger of complications, and a stronger and healthier baby. Vomiting, indigestion, miscarriage, dropsy, kidney disease, convulsions and other troubles of pregnancy can always be controlled and usually prevented by homœopathic treatment.

There are certain tendencies to various forms of constitutional disease in every one; but, to a large extent, these can be removed from the mother and from the unborn child by homœopathic treatment of the mother before and during pregnancy.

VI. *Homœopathy in surgical conditions.*—Patients who are fortunate enough to have homœopathic treatment seldom need operations. At least, ninety per cent. of present day operations could be rendered unnecessary by the intelligent choice of a physician.

In conditions which have progressed so far as to render an operation imperative, not only is complete recovery almost certain, but the after

effects are, at least, twice as good when a homœopathic physician and surgeon are working in harmony. The very best surgeon obtainable is seldom competent to treat a case medicinally; because his interest, his education, and his training have been almost exclusively surgical rather than medical.

It may be that a person is certain to die unless operated upon; and, also, that he is very liable to die in spite of an operation, owing to the shock following all operations, especially in those who are severely weakened by disease. Under such circumstances, homœopathic remedies overcome weakness, control shock, and relieve all forms of dangerous and disagreeable symptoms, without, in any way, interfering with the work of the surgeon. It is, therefore, important that a homœopathic physician should be consulted in all surgical cases before an operation is decided upon.

VII. *Homœopathy in chronic diseases.*—It is possible for nearly all chronic sufferers to be cured by a systematic course of homœopathic treatment by physicians who have specialized in this kind of healing.

Even in the last stage of organic disease, when the vitality is exhausted and death is unavoidable, homœopathic treatment prolongs life, prevents suffering, and renders death painless without stupefying the patient with morphine. It is most important for those who are nearing the end to continue in full possession of their faculties, for the settlement of estates, the drawing of wills, and for religious reasons.

VIII. *Homœopathy in the diseases of men.*—The working of nature's laws makes no distinction for age, sex, or the morality of individuals. Ailments which result from the sowing of wild oats can be radically cured by a course of individual specifics. The usual methods of treating such diseases with strong doses of poisonous drugs continued over long periods are seldom curative. This is proved by the poor health of such men subsequently, as well as by the ill health of the wives and children who come later.

IX. *Homœopathy in diseases of the mind.*—The following quotations are taken from the book, "Mental Diseases," by Dr. W. M. Butler, Professor of Psychiatry, New York Homœopathic Medical College.

"The brilliant results achieved demonstrate that homœopathy is as successful in mental disease as in the other ills of humanity." "The homœopath needs no assistance from opiates, hypnotics, and anodynes" (habit forming drugs). "Desperate and apparently hopeless cases are often restored to perfect health of body and mind." "When the cure is fully accomplished it remains permanent."

Every homœopathic physician is able to verify these statements from personal experience. The superiority of homœopathic treatment has been publicly demonstrated in those state hospitals for the insane now under the control of homœopathic physicians.

SCIENTIFIC CORRECTNESS OF HOMŒOPATHIC TREATMENT.

Even the thoughtless boy knows better than to thaw his frostbitten fingers before a fire. He knows that a gradual thawing in ice-water or melting snow is preferable; and he also knows something of the baneful results of heat at such a time, either from hearsay or from never-to-be-forgotten experience.

Also, those people whose work causes them to be frequently subject to burns know that the pain and inflammation following such accidents are markedly relieved by holding the burnt part close to the fire; and while the pain may be temporarily relieved by cold water, that it becomes much worse afterwards.

Now, why is ice-water best for frost-bite, and why is heat best for recent burns? Is it possible for such to be anything else than examples of the "Law of similars" by which physicians should be governed in the treatment of all forms of disease? The recently-advocated treatment of bacterial diseases, such as blood-poisoning, rheumatism, tuberculosis, etc., with vaccines (which are solutions of dead bacteria or their toxins) is nothing more than a modified form of Homœopathy, which originated with, and has been in use among, homœopaths for the last fifty years, although no credit is given to the originators by the recent discoverers. Homœopaths have the advantage over other physicians in knowing how, when, and where to use these agents, as a result of many years of experience; since vaccines are useless in the majority of ailments, and are frequently harmful in the strong doses usually advocated.

Since all physicians acknowledge the harmfulness of contrary methods in frost-bite and burns, as well as the value of similarly-acting vaccines in bacterial diseases,—why do so many of them still continue to use drugs and other remedial measures according to contrary methods which are just as harmful, unscientific and useless as would be the application of heat for frost-bite or cold for burns? Is it because of prejudice, ignorance, indifference, or laziness that they refuse to study and apply the logical extension of the "Law of cure" in the general treatment of disease?

WHY ALL PHYSICIANS DO NOT PRACTICE HOMŒOPATHY.

The rank and file of old school physicians know nothing of Homœopathy because it is not taught in their colleges and seldom mentioned in their medical journals except in a derogatory manner, or in a spirit of ridicule. Also, its discussion is prohibited in the meetings of their societies, and they are taught to look upon it as opposed to their interests, and as something which should be ignored or exterminated, rather than as something to be investigated and used for the benefit of humanity. Only a small percentage of physicians ever come to know anything definite about it, therefore, and the majority are so prejudiced against it that they are unable to judge impartially when its beneficent results occasionally come to their notice. Those physicians who do investigate and adopt

Homœopathy are forced to resign from their college and hospital positions and medical societies, and are ostracized by their former associates, a penalty that few men have the hardihood to incur.

Like every other revolutionary improvement, Homœopathy is detrimental to many powerful established interests. It is detrimental to drug manufacturers who have millions of dollars invested in their business, and to most of the medical journals who depend largely upon drug advertisement for their income, because the sale of drugs is decreasing, and when Homœopathy is universally adopted will be but a fraction of what it now is. It is detrimental to all lines of business associated with medicine, because it eliminates at least two-thirds of otherwise unavoidable sickness. It is detrimental to many physicians of prominence who must be supplanted by physicians specially trained to practice Homœopathy, and such training is obtainable only after years of special study.

It is only a question of time until Homœopathy will be generally accepted and used by all physicians; but no radical change in political, legal or medical conditions ever occurs suddenly; the change is always gradual, for the reason that the leading men in every profession, and those holding positions of authority, are always violently opposed to changes which are harmful to their own interests, and such men do the thinking for the majority of their brethren.

History bristles with examples showing the difficulty of establishing reforms, and the persecution of reformers. Harvey, who discovered the circulation of the blood, was ridiculed and persecuted after giving proofs of his discovery. Dr. Semmelweis, Professor of Obstetrics at Vienna, was degraded and driven insane by persecution after proving to his brother physicians that the awful mortality among women, following child-birth, could be prevented by cleanliness. Dr. Morton, who made painless surgery possible through his discovery of ether anesthesia, was persecuted as an enemy to the human race. And Dr. Hahnemann, the founder of Homœopathy, previously acknowledged to be one of the leading medical scientists of Europe, was ostracized and persecuted for the rest of his life merely for demonstrating to his medical brethren the homœopathic method for the radical cure of disease.

COMPARISON WITH OTHER METHODS.

By the usual methods of giving drugs, which are so devoid of everything scientific or methodical as hardly to justify the use of the word "method," drugs are given which have an opposite, contrary or different action to that seen in the disease for which they are prescribed. Drugs so used are never really curative, because they are in a way which is contrary to nature's law of cure as expressed by the formula "*Similars cure similars.*"

Since the diseases and the drugs so used are contrary to each other in action, and, also, since drugs so used have no specific relationship to the individual patient, strong doses are necessary in order to produce results;

and what is more important, it is the poisonous action of such drugs, rather than their curative action, by which such results are obtained.

While the use of drugs in large doses may seem necessary to the average patient, both science and experience have proved large doses to be not only unnecessary, but usually productive of more harm than good. All drugs are poisonous in strong doses, otherwise they would be useless for medicinal purposes, since it is their power to produce symptoms (poisonous action) that makes them of medicinal value. When given in strong doses, they invariably cause chronic drug diseases which closely resemble natural diseases, and are usually mistaken for them by patients and by the majority of physicians.

The bone pains, catarrh and sensitiveness to cold caused by *Mercury*; the chilliness, liver disease and incurable deafness caused by *Quinine*; the puffy face, paleness, weakness, chilliness and restlessness caused by *Arsenic*; the irritability, nervousness, indigestion and constipation caused by *Nuxvomica* or *Strychuine*; the skin eruptions, sleeplessness, and even insanity caused by *Potassium bromide*; the sallow, lead-colored complexion, pale bluish lips, and weak heart following the use of headache powders are only a very few of the chronic symptoms which result from the abuse of drugs.

With the exception of a very incomplete knowledge of the acute poisonous action of a few drugs, derived from experiments on animals, and the examination of those who have died from poison, the members of the medical profession, except the homœopaths, know but little of the chronic results producible by the drugs used in their everyday work. The reason for this is that, with the exception of the homœopaths, the profession has never undertaken a systematic study of the action of drugs on healthy human beings, which is the only way in which such knowledge can be obtained.

On the contrary, thousands of such experiments have been made by homœopathic physicians who have taken such drugs themselves for long periods of time. By keeping careful daily records of the symptoms which resulted, and by comparing them with the records of other experimenters, homœopathic physicians have been able to learn accurately the disease-producing powers of every important drug in its entirety.

It is the symptom records of thousands of homœopathic physicians, compiled in book form and known as the *Homœopathic Materia Medica*, which enables homœopathic physicians to recognize drug symptoms and to prescribe the proper antidotes. It is the knowledge of drugs contained in the *Homœopathic Materia Medica*, and nowhere else, which enables the homœopathic physician to select with accuracy the similar curative drug for every individual case of disease.

For pain and sleeplessness the average physician is usually forced to rely upon such drugs as morphine, acetanilid, chloral, bromides, etc., which must be given in strong doses in order to produce results. Such drugs give temporary relief by stupefying the brain and the nerves of

sensation. They are never curative; and, unless the illness is only a temporary one, drugs of this character must be frequently repeated in still larger doses in order to continue the effect. It is in just this way that health is often ruined, drug habits formed, and many useful lives irretrievably wrecked.

On the contrary, real homœopathic drugs are never poisonous in effect, and never cause drug habits because of the special way in which they are prepared.

For excessive pain, with restlessness and sleeplessness, the homœopath would give small doses of some *one* drug, the action of which accurately simulated the peculiar symptoms of the individual patient. A drug used in this way, while it is specifically curative, does not stupefy the patient, nor does it ever result in the formation of a drug habit, nor in the formation of a drug disease.

The homœopath endeavors to give each patient his individual, specific, curative drug. He aims to fit the remedy to the patient as accurately as a well-fitted suit of clothes.

A dozen homœopaths, in one case of pneumonia, for example, would be unanimous in the selection of the same drug. In another case of pneumonia they would probably all agree to give an entirely different drug, because the individual symptoms of the two patients would be different, and would, therefore, call for different drugs. The reason for the careful selection of remedies, based on the individuality of patients, is that experience has proved that by such means only can positive curative results be obtained.

On the other hand, when other physicians consult together, there is seldom any attempt at real individualization, or any uniformity of opinion. Without a law of cure to guide them, each physician is a law unto himself; each has his own routine treatment for each disease, which he gives with but slight variation to every patient suffering from such a disease, and his method often differs markedly from the routine treatment of each of his fellows.

Routine methods of treatment based on the diagnosis of disease are generally ineffective and unscientific, because that which is curative for one patient is useless for the next. A medicine can be curative only when its disease-producing powers are specifically and exactly similar to the peculiar symptoms of the individual patient.

REASON FOR SMALL DOSES.

Since the symptoms of the patient and the symptoms which the drug is capable of causing are of a similar nature, the patient is certain to be very sensitive to the action of a homœopathic drug. If, therefore, such a drug is given in strong doses, the symptoms will be increased, and the patient will, feel worse instead of better.

When, however, the homœopathic drug is given in very small doses, its action is at once curative. In other words, very small doses have an

opposite action to that of large doses; or small doses are curative for symptoms like those caused by large doses.

Small doses are, therefore, necessary in homœopathic practice in order to relieve the patient without first making him worse. In fact, such small doses are very much more powerful for the patient than they are for well people, or for other patients with dissimilar symptoms.

Since it is the curative, non-poisonous principle represented in the small doses used, rather than the poisonous chemical effect of large doses, it is easy to understand why an overdose of homœopathic medicine may often be taken through error, either by the patient or some one else, without poisonous results.

When it is understood that disease primarily consists of a disorder of certain special groups of body cells, and that these cells are so small that a piece of flesh the size of a pin-head will contain millions of cells, it is easy to see why such cells are best acted upon by homœopathic medicines which are so prepared that their particles, also, are in a finely divided state.

CONCLUSIONS.

In spite of the apparently slow progress of the medical profession in adopting better methods for the cure of disease, when we stop to consider that the medical practice of one hundred years ago was crude, barbarous, based on empty theory, and absolutely unscientific in nearly every respect, and that modern medicine, compared with the medicine of the Dark Ages, is chiefly a development of the last twenty-five years, we should be thankful for the great gains that have already been made in the endeavor to place medicine upon a strictly scientific basis, and should be very optimistic for the future.

Great advances in the control of preventable disease have recently been obtained for the first time in the world's history, through disinfection, quarantine and improved sanitation. Such human scourges as yellow fever, cholera, small-pox and bubonic plague, formerly considered as unavoidable evils, or as examples of Divine wrath, are now things of the past in civilized communities. Malaria, typhoid, diphtheria, scarlet fever, and other forms of preventable disease, in all probability will also soon be things of the past.

Such results in the control of epidemic disease are due to the efforts of physicians and sanitarians in the employ of the various governments, and the obtainable only through the authority of government officials.

In contra-distinction to the duties of government sanitarians, it is the duty of the medical practitioners to improve the health of the families in the charge. It is his duty carefully to fit himself by impartial study and investigation for the successful cure of those diseases which are peculiar to families and individuals; the common everyday acute and chronic diseases which are always with us in spite of improved sanitation. And it is also his duty never to allow prejudice or sectarianism to govern his studies and investigations or his methods of practice, but always to

be governed by the spirit of the true scientist who tests all things pertaining to his special field of endeavor in order that nothing important shall escape his notice.

It should be the endeavor of physicians to cure diseases of a constitutional nature, thereby raising the standards of individual and family health, and eliminating most of the ordinary forms of sickness. If all physicians were competent to do this, there would need to be no deaths except those resulting from accident and old age.

At present there is no method known to science for the elimination and cure of constitutional disease other than the homœopathic method; and since this is founded upon "*Nature's law of cure*" it is doubtful if anything else will ever be discovered to take its place.

Diet, fresh air, change of climate, hydrotherapy, massage, mechanical therapy, spinal manipulation, electricity, surgery, organotherapy, and mental therapy, all have their place in the treatment of disease; but for the radical *cure* of disease, and for the eradication of disease tendencies, none of these can ever take the place or do the work of specific homœopathic medicines. Homœopathy cures when other measures only palliate or relieve temporarily.

The adoption of real homœopathic methods by the medical profession, and the universal adoption of homœopathic treatment by the public at large, will be as successful in the increase of health and happiness as has already been accomplished through the control of such diseases as cholera, yellow fever, small-pox, typhoid and diphtheria.

Since the time of Hahnemann, the founder of the homœopathic school, Homœopathy has spread by leaps and bounds, in spite of the most violent and bitter opposition, and it is only a question of time until its truth will be universally acknowledged, and its methods of treatment be in general use. In the meantime, these patients who have been benefitted by it can do much for the general welfare by taking an active part in the spread of its doctrine among their less fortunate friends. In fact, every intelligent person who is acquainted with its advantages should become an active missionary in its favor, and thus hasten the time of its general adoption, not only for his own good, not only for the good of his friends and relations, but for the good of all mankind.—The *Homœopathic Recorder*, February 15, 1914.

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THE UNITY OF MEDICINE.

By CARL BECK, M.D.

The only certain event in life is Death. Sooner or later a sickness befalls everyone which no vigor of constitution can withstand and no physician's skill can cure. All other illnesses spare life, and are led to a favourable issue by natural powers of resistance, or by art, or by both of these united. Thus we perceive there is one direction in which nature opposes an impassable barrier to human power; that there is one hour in which knowledge, experience, and devotion are all in vain. But we cannot tell at what period of life the supreme summons shall arrive. At every other moment than this single one the sick man's fate is in the physician's hands. On his prudence and skill it depends whether the sufferer shall survive or perish, whether he shall rise from his couch with a shattered constitution, or whether he shall return to active life with fresh vigor, a sound and happy man. What momentous events depend upon the physician's skill! What glory if he can guide aright; what shame if he directs them wrong!

It is no easy task to control the issue of life, to arrest disease in its threatening career, or to invigorate the wasted economy.

Is this living mechanism, and are the powers that move it, so simple that we can easily determine what portion is at fault, and how it can be restored to soundness, or can we measure how wide a departure from health must be fatal to life, or even constitutes disease? One single drop of a liquid may suffice to arrest the heart in full career, and so suddenly cut short the silver cord of life that the eyes stand fixed and glistening, as if staring wildly from the dead countenance. A sudden turn of the head, or an unusual strain upon the muscles of the heart, may extinguish life as a taper that the wind puffs out. Or, on the other hand, one limb after another may be wrenched from the body, an iron-bar pass through the head, a weight transfix the chest—organs may be robbed of their activities, the heart and its great vessels become a mass of disease, the digestive organs may be the seat of vast organic changes, or even, one-half of the body may be cut off from all conscious intercourse with the rest, and yet life survive these shocks and injuries. *

Is it likely then, that an organism which in different individuals and under different circumstances, is endowed with such singular and diverse powers and capabilities—which perishes before the insect of an hour, or which resists destruction more tenaciously than that of any other animal—is it likely that the means of guiding its powers so that they shall promote the return of health to the sick, or of developing them so that they shall reach the highest point of endurance and strength—is it likely, I repeat, that this can be done by those who neither know its structure, its mode of development, its manner of support, or its relations to external agents, their salutary or morbid influences upon it? Assuredly not.

But these facts constitute the science of medicine, and a knowledge of them is essential to the physician. Do we not all recognize as the ground-work of the art of medicine, a correct diagnosis of disease? In this department of medicine there is evidence on every side that knowledge has been progressive. The wise men of ancient times confounded affections which the physician can now readily distinguish, and the latter, having

the experience of all antiquity to guide him, as well as all the light of modern science, must of necessity, be more competent to treat disease than he who possessed only a portion of the former knowledge. Between the medical knowledge of the Hippocratic times and of our own there is all the difference that there is between the sapling and the oak-tree, between the brook and the river, between the morning dawn and noonday. But it is a difference of degree and not of kind. Man is the same being, sustained by the same powers, liable to the same injuries and diseases, and soothed or cured by the same remedies. What was then true in medicine is still true; but vastly more is now true than was ever dreamed of in those days of great thoughts and small experience. The infant science has grown to manhood with all its stalwart vigor and its ample form. The sapling has become the oak. As time advanced it put forth new shoots, until what were once mere twigs have spread into vast branches, under whose shadow the nations find relief from pain, and a refuge from the destroyer. And let it be observed that medicine, like the tree, is one. Its several parts, though various in form and purpose, are all essentially connected portions of an organic whole. As one cannot support the branches without the trunk, nor make the trunk useful except as a means of supporting the branches, nor yet lop off any of these latter without impairing the symmetry and unity of the whole, so Medicine is despoiled of its beauty and hindered in its usefulness when all of its departments are not cultivated with equal assiduity and completeness. This idea of the Unity of Medicine, it is of the last importance that every one should possess who desires to find solid advantage as well as pleasure in its cultivation.

What does Medicine embrace? The study of man, his diseases, and their cure. Already one catches a glimpse of the natural bond which unites the various departments of our science, you begin to suspect its vast extent. The study of Man? He has been called the microcosm, "the little world," as representing in himself the universe. He is material, for he has a body; he is vital, for he has life; and he is spiritual, if it pleases you;

and all mysteriously united in himself. The body is organized; that is its most evident quality; it is a mechanism, and it is curious to remark that a knowledge of this mechanism which would appear to lie at the very foundation, and form the very corner-stone of medical science, was really one of the last of its departments to be cultivated. For nearly 2,000 years the structure of the human body was only inferred from that of the lower animals; the arrangement of the machine whose preservation and repair are the sole objects of medicine was really unknown. It is true that, 300 years before the Christian era, Herophilus of Alexandria is said to have practised human dissections, and even upon the living bodies of criminals given to him. A portion of the brain, torcular Herophili, still preserves his name. But in this respect he stands almost alone. Neither the pagan nor the Christian world could overcome the prejudice, which seemed innate, against the mutilation of the dead; and that for a time nearly as long as that of the whole Christian era, Medicine was deprived of the light derivable from the study of anatomy. It was not until A.D. 1308 that the Supreme Council of Venice permitted the medical college of that city to perform a human dissection once in every year. About the same time, A.D. 1314, Mondino of Bologna published a very good description of the viscera of the trunk and various other parts, yet, strange to say, he apologizes for omitting a description of the internal ear by saying that the petrous bone cannot be well separated from its connection without boiling, an operation which he held to be sinful, and so rejected. In spite of these attempts to acquire knowledge of the human structure, it was not until two centuries later that the foundations of modern medicine began to be laid by Vesalius, (born in Brussels A. D. 1514); and it is only since 1628, when the immortal discovery of Harvey first was published, that they have been really in a condition to bear any scientific structure at all. Thus the department of medicine which is the most essential of all, was one of the very last to be improved. There can be little doubt that if anatomy had been cultivated in ancient times, as it is at the

present day, medicine would now have been many centuries in advance of its actual position. The nature of diseases, their causes and their remedies, would all have been better known and a higher point of civilization would have been attained. Vast and enduring was the mischief which an irrational prejudice had inflicted.

From the time of Harvey, anatomy was cultivated with diligence and zeal. The grosser parts were all faithfully described, but soon afterwards the use of the microscope by Malpighi, Leeuwenhoek, and others, revealed wonders of structure unsuspected before. So late as 1801, the elementary tissues were recognized and described by Bichat, and it was only 1838 that Schwann announced the surprising discovery that all animal organisms originally possess a perfectly identical cellular composition and that elementary cells form the basis of all the higher structures. Thus, rising from one discovery to another, anatomists appear to have reached the ultimate element of organization in the cell; and while advancing upon their brilliant course, they have illustrated and shed more and more light upon the mechanism of those vital actions by which life is sustained, or by which, when they are perverted, life is destroyed.

But this body, this mechanism, whose parts are so curiously diffused and interlaced that almost every portion appears to be an epitome of the whole—is the seat of life, a force by which the mechanism is put in motion, by which it grows, and undergoes repair, and sustains innumerable relations to surrounding objects. The study of the phenomena presented in these various conditions, and of the laws which govern them, constitutes the science of physiology. Physiology is the child of anatomy; its existence is hardly possibly without this latter. The physiology of the ancients was a tissue of conjectures possessing hardly any basis of fact, and this department of medicine rested upon no scientific foundation whatever, until the discovery of Harvey, and that of the lymph which followed hard upon it. To a knowledge of the circulation was rapidly added all that simple mechanical methods of investigation could reveal. The admirable

correspondence of structure and function was demonstrated. The process of nutrition was traced from the food in the stomach, through its transformations in the blood, and into the very tissues that it builded up. The germ of the new being was studied in all its wonderful phases, from the moments of conception, during its uterine existence, and development, until it comes forth to the light of day as a social entity. The nervous system, that mysterious structure, which seems to be more closely allied with life than the rest of the organism, through which we have consciousness of existence, and hold relations with the external world, was forced to yield a knowledge of its multiform functions in controlling and regulating all the actions of the economy.

But now, when simple inspection and even the magic glass of the microscopist had nearly exhausted the harvest field, leaving but scanty grains for recent investigators to glean, when the organs had, as it were, been seen at work, and their actions, reactions, and productions fully studied, there was still a barrier that appeared to stop all further progress, a veil that seemed to mock the inquisitive gaze. The question which, with another meaning, has distracted Christendom, in a mere material sense puzzled the philosopher's brain. How is it possible that bread shall be made flesh? The hand of Chemistry has thrown the barrier; it has drawn aside the curtain, and disclosed a spectacle so vast, magnificent and beautiful, that the mental eye is blinded in beholding it. The science of organic chemistry has been created by the researches of Berzelius, and Mulder, and Liebig. It has thrown a flood of light upon the dark places of physiology. Its reagents have penetrated deeper than the eye, deeper than the microscope; it seems to have reached the very lowest material elements of organic life; prepared a foundation upon which pathology has built a symmetrical and imperishable edifice.

But as physiology is only an anatomy of the living being, so organic chemistry is only a minute physiology; and thus anatomy, physiology and chemistry are in reality but one; they

are subdivisions of the same science. To these might properly be added the study of the spiritual part of man, which is closely allied with and so profoundly influences the body. This department of knowledge has teemed with speculation; for the data of mental philosophy are not substantial, and therefore must be difficult to define. But just in proportion to our increased acquaintance with mental operations and the means of directing them at will, must be our success in curing that fell disease compared with which all other pain is trivial, and man's last enemy a friend.

In the thoughts expressed, the writer has sought to present the subject of our study as philosophers, and of our cure as physicians, and here our brief survey of one great department of medical science closes, the department that relates to healthy man. We have him as a mechanism, examined the recondite processes by which he lives and moves, and we have glanced at his spiritual self.

And when we contemplate man's wondrous constitution, we can with difficulty repress the question, why then is not man immortal? Doubtless this feeling has been entertained in all ages, for we see it expressed in Grecian fable, in the fountain of Jouvence, and in the eager search after the elixir. From the beauty and the glory of creation we must turn to behold its ruins and its shame; to behold discord for harmony; decay for growth; death for life; to see the noble figure of man exchanged for one in which celestial fire is quenched by earthly mists; instead of a form radiant with beauty and strength, to behold one whose boasted powers wither before the moth. You will remember with what fearful images the poet fills the vision:

“Immediately a place

Before his eyes appeared, sad, noisome, dark;

A lazarus it seemed; wherein were laid

Numbers of all diseased; all maladies

Of ghastly spasm, or racking tortures, qualms

Of heart-sick agony, all feverous kinds,

Convulsions, epilepsies, fierce catarrhs,

Intestine stone and ulcer, colic pains,
Demoniaic phrensy, moping melancholy,
And moonstruck madness; pining atrophy,
Marasmus, and wide wasting pestilence,
Dropsies and asthmas, and joint-racking rheums.
Dire was the tossing, deep the groans; Despair
Tended the sick; buiest from couch to couch;
And over them triumphant Death his dart
Shook, but delay'd to strike, though oft invoked
With vows, as their chief good and final hope."

Paradise Lost, Book 1, 477.

Yet man is still capable of great achievements, his intelligence furnishes him with the means of avoiding destruction and danger, of supplying his wants, of soothing his pains, of curing his diseases. Even in the rudest form of society, the physician reigns supreme. Before him the swarthy chieftain, whom no earthly peril can affright, confesses tremblingly the mysterious and invisible power. In the infancy of historic nations, of Jews as well as Pagans, the same origin was ascribed to medicine, as if in recognition of the doctrine that disease is the inevitable consequence, and the punishment of sin.

Let us glance at its progress through the past.

For a long time all knowledge of disease was derived from the mere observation of symptoms; their occurrence in a fixed succession and in certain groups so as to suggest the idea of separate diseases, although not wholly unnoticed, was nevertheless not recognized fully by Hippocrates, nor indeed, very clearly by any of his successors until more recently. On the other hand, the importance of individual symptoms and groups of symptoms, in relation to prognosis, was more fully appreciated, more so, it is probable, than at the present day, when our superior skill in diagnosis, and our more efficient treatment have reduced the uncertainties of result within much narrower limits than formerly. The first writer whose descriptions contain an account of separate diseases which approaches completeness, was

Aretaeus of Cappadocia, who lived about the middle of the first, or according to others, of the second century of the Christian era. A German writer styles him the most brilliant of all the stars which adorned the bright firmament of the early Roman Empire. But even subsequent to the time of Aretaeus, the idea of disease and, therefore, its description, extended no further than the grouping of symptoms. Whatever was more than this consisted of hypothetical accounts of the combinations into which various morbid humors were supposed to enter. Nor, during the fourteen centuries that elapsed between the commencement of the Christian era and the cultivation of human anatomy as previously described, can there be said to have been any real additions to the knowledge of disease. But with anatomical research, the discovery of the circulation of the blood, and the recognition of pathological lesions as the representatives of nearly all diseases, the knowledge of the course and distinctive features of these latter became rapidly perfected.

Space would fail me were I to attempt even an enumeration of the discoveries and improvements which have illustrated the annals of practical medicine from the time of Harvey to the present day; suffice it to say that they nearly all originated in the mutual support and illustration lent to one another by anatomy, physiology and pathology. The study of symptoms acquired an interest previously unknown when these phenomena were seen to be the expressive language of suffering and diseased organs. In descriptions of disease they were now arranged with reference to the organs which produced them, and this, as in all other cases of natural classification, led to a more minute and comprehensive study of the symptoms themselves. Whoever will compare with one another the descriptions furnished by Ballonius and Fernel in the sixteenth century, by Sylvius, Baglivi, Mead, and Sydenham in the seventeenth, and by Boerhaave, Hoffman, Haller, Whytt, Cullen and Rush in the eighteenth century, must be struck by the steady development of knowledge respecting the causes, symptoms, distinctions, tendencies, and terminations of diseases.

Let me allude to a few of the advances which have been made in this department during the 19th century. There is the immortal discovery of Laennec, which has rendered the living body, as it were, transparent, so that the play of the internal organs, their hindrances to action, and their decay, have been rendered evident to the senses, as in certain ingenious hives of glass we may watch the busy bee at her dainty and incessant work. There is the application of physical and chemical methods to the analysis of the tissues and of the secretions and excretions, and especially of the blood and urine, methods which have illustrated an appartment of knowledge that was hitherto penetrated only by a feeble and uncertain light. There is the whole class of cutaneous diseases once involved in dire confusion, but now rendered intelligible. There, too, is the great family of fevers, diseases which have been separated from inflammatory affections, with which in most cases they previously were confounded. And what shall I say of individual diseases? In the whole catalogue there is not one of them whose natural history has not been written anew, whose distinctive features have not been imperishably daguerreotyped by the light of modern science. Yet although so much has been accomplished, and still more remains to be achieved; for every year new forms are revealed by a stricter observation of symptoms or chemical and pathological researches, until the mind recoils at the thought of how much greater than was suspected, is man's heritage of knowledge.

Then, for the first time, it was clearly perceived that the body is a living mechanism, and that its diseases are derangements of its parts which must be known before a just idea can be acquired. This principle, drawn from observation and not from speculation, constitutes the germ of modern pathological science. Out of it springs the fundamental fact defended, indeed, originally by the Cnidian in opposition to the Hippocratic school, that diseases are real physical entities, each one differing from every other, and insusceptible of being converted into any other, just as in an artificial mechanism every wheel, lever, weight, and spring has

its peculiar office, and is subject to special derangements which produce effects (symptoms) different from those of every other portion of the machine. A disease of the lungs is one thing, and a disease of the liver another, still more, several or even many diseases may effect the lung or the liver, and each, from first to last, present phenomena, peculiar to itself. Building upon such ascertained facts, as upon a secure foundation pathologists learned to scrutinize more and more closely the symptoms of diseases, and compare them with internal lesions found after death, or those observed during life in parts accessible to sight. Thus it was discovered, not only that every organ has peculiar modes of being diseased, but also that every tissue, and the blood itself, has equally its own susceptibilities, its own pathological changes, and its own symptoms. To this point, if not still further, the brilliant discoveries of Bichat and the investigations of Andral and others have conducted the present generation of pathologists. But these results could never be attained without the aid of morbid anatomy. Symptoms constitute but one half, and that the less important half of disease. In external affections this truth is self evident. If we see that a wound is healing, a fracture uniting, we think comparatively little of the pain of fever which accompanies these processes. But when internal parts are affected we attach a higher importance to mere symptoms, while their source is out of sight we are obliged to measure its importance by their gravity. If, however, we are enabled by physical methods to determine the character, extent, and stage of the lesion, we transfer the case into the same category that external diseases belong to, and can estimate far better than without their aid the opportunities for cure.

From ancient times prejudice had stood in the way of all successful inquiry into the connection between diseases and the structural changes with which they are associated, and, like all popular sentiments, it was too deeply rooted to be speedily removed. Towards the close of the fifteenth century lived Antonio Beniveni, the Florentine, who may be regarded as having laid the foundations of the science of morbid anatomy,

for in a posthumous work "On some of the hidden and wonderful causes of diseases, and their cure," he records the results of numerous dissections of the bodies of his own patients. Fifty years later an ardent cultivator of this science appeared in Marcellus Donatus of Mantua. Allow me to quote a passage from his writings, in order to show you how clear and elevated a view he possessed of the value of pathological dissection. "Let those," he says, "who would interdict the examination of dead bodies be convinced of their error. When the nature of a disease is obscure and they refuse to permit a post-mortem examination of the patient's remains, which presently must become food for worms, they render no service to the lifeless clay, but, on the contrary, are guilty of a serious wrong against their fellowmen, for they prevent physicians from gaining information which would be of great value to other persons affected with a similar disease. Those squeamish physicians, too, are quite as much to blame, who, from indolence or from a too dainty sense of smell, neglect dissections, rather preferring to remain in the darkness of ignorance, than to be at the trouble of searching for truth. They ought to remember that such conduct renders them guilty towards God, themselves, and their fellowmen." This language, kind readers, was spoken over three hundred years ago.

The brilliant results of cultivating morbid anatomy soon attached to it a number of eminent men in the seventeenth century. Such were Schenck, of Graefenberg (1602), Plater (1614), Silvius (1641), Tulpius (1614), Wepfer (1658), Willis (1664), and Bartholini (1664), whose treatise on this subject as well as upon normal anatomy, the labor of twenty years, was destroyed by fire; and finally, Bonetus (1679), whose *Sepulchretum* contains all that had been previously known, as well as much that was novel concerning morbid anatomy. This author considers in succession the diseases of the head, chest, abdomen, etc. Almost another century elapsed before the great work of Morgagni appeared (1761). In it, as in preceding ones, pathological conditions of the body were considered only in connection with the particular diseases in which they occurred. No attempt was yet

made to generalize the results of observation, to group together similar alterations of structure, and thus to form a science of morbid anatomy. This was at first attempted by Baillie, of London (1793). Thus, although he described in succession the lesions peculiar to the heart, the lungs, the stomach, etc., he also gave an account, under each of these heads, of the several kinds of lesions, of inflammation, of tubercle, of ossification, of hypertrophy, atrophy, etc. The general anatomy of Bichat tended to perfect this arrangement, and thenceforth, the lesions peculiar to each tissue were studied in their modes of development and terminations, and shown to be as much under control of fixed laws as the original and normal growth of these same tissues.

Among the pathological anatomists who, since the time of Baillie, have contributed to perfect their science, the more conspicuous may be named: In England: Bell, Cooper Abercrombie, Bright, Hodgkin, Hope, Carswell, Craigmie, Paget.

In France: Bichat, Cruveilhier, Lobstein, Louis, Rayer, Andral, Nelaton, Dance, Durand-Fardel.

In Germany: Meckel, Otto, Blumenbach, Albers, Vogel, Haase, Rokitauský, Gluge, Engel.

Thus it was that morbid anatomy by degrees assumed a scientific form, and diseases, so far as they affect structure, were seen to receive their characteristic features from the nature of the tissue they chiefly involve. As in normal anatomy the microscope and chemical reagents were employed to conduct investigations which the unassisted vision was incompetent to complete, so the same methods were appealed to with equal success in bringing to light the hidden processes of disease. They demonstrated that morbid changes of structure are merely abnormal forms of nutrition, that the primary molecules or cells are the real seat of these changes, and, further, that the blood itself, in its chemical or physical organization, is most frequently either the starting point of disease, or the field upon which the principal changes of disease takes place. Pathological anatomy has followed normal anatomy, year by year, and step by step, as

closely as the shadow follows the substance. The grosser objects in each were succeeded by others which had been invisible until revealed by the lens and the chemist's skill; and, finally, as the physiologist had traced the stream of life from its more evident manifestations in the organs up to those microscopic and mysterious cells whence it primarily springs, so the physiopathologist has followed with equal zeal and success the ravages of disease from the outward unsightly lesion to its prime sources in molecular derangement.

At this point physiology and pathology both must pause; hand in hand they trod the rocky paths of science, enlightening, encouraging, and supporting one another they have penetrated the secrets of that divine mechanism which was a mystery to ancient philosophers, and at last, having apparently explored all its recesses and explained all its phenomena, they find that the pathway of science suddenly terminates. An adamant wall bars their progress, and upon it is inscribed in fiery letters, *Life*. Yes, that inscrutable and subtle essence, so curiously wedded to the organism, is the source of its activity, the power which evokes all the phenomena of health and disease. Bound, on the one hand, to matter, controlling its forms and functions, on the other, it is affected by material as well as immaterial agencies, and by either may be oppressed or strengthened, bowed in melancholy or exalted to a vision of celestial bliss. Between the phenomena of matter which our senses and our reason investigate, and life, the immaterial cause of these phenomena, there would seem to be fixed a gulf impassable to man. "A gulf impassible," I say; but even here the work of Jacques Loeb and President Schaefer's address throw the gauntlet of defiance, and who knows, but impeach the word "impassable."

In the survey which has thus far been taken of medicine, its unity of character cannot be misapprehended; it is, indeed, seen to be nothing but a study of the human mechanism in health and in disease, living and dead. But man is placed in the midst of a material universe, where he is incessantly acting upon surrounding objections, and being subjected to their influences.

Many of these influences are salutary and, indeed, essential to his existence; many are hostile to his health and even life. This simple statement points to two grand divisions of medical study, etiology and hygiene. Etiology, the science of morbid causes, which inquires into all those relations of man with material agents, internal as well as external, which are adapted to produce disease; and hygiene, the science of health, including the conditions of its preservation and improvement. In a complete and a systematic course of medical study these subjects always hold a prominent place, and are unsurpassed by any others in utility and interest. In spite of hygienic rules, or owing to their neglect, it is certain, diseases abound. They beset the path of life from its commencement to its close, attacking the germ in the womb, blasting the blossoming hopes of childhood, prostrating man in his pride of power, and cutting down the hoary head upon the verge of the grave. No wonder that it should have been one of the earliest of human efforts to find the means of mitigating the pains of sickness, and of averting death. There is, indeed, an instinct, which man shares with the brute creation, leading him to make use of various objects around him for the relief of pain; and, doubtless, his observation of the lower animals has prompted him in the choice of certain remedies for disease. Casual experience, too, of the qualities of plants and their products, of waters, and of the substances, employed by him as food, led him to a further knowledge still, until he learned what would quench his feverish thirst, cool his burning skin, relieve the stomach of its oppressive load, evacuate the bowels, excite perspiration, or allay pain. Thus by repeated experiment and observation, the catalogue of remedies extended until many were found appropriate to each of the objects which seemed necessary in the treatment of disease. The symptoms of disease, on the one hand, and the application of remedies suggested by them on the other, for a long time contributed the whole art of medicine. There was no knowledge of anatomy, physiology, or pathology: nor, within certain limits was any needed, any more than an acquaintance with those

sciences is necessary to constitute an excellent cook. Therapeutics and the art of cookery (which is a branch of dietetics) followed precisely the same mode of development; the one sought the quickest, safest, and most agreeable plan of curing disease, and the other the most certain means of at once gratifying the palate and preserving the health. External remedies naturally were used before internal ones: indeed the earliest accounts of the treatment of disease refer to the former alone. But from the time of Orpheus (B. C. 1500) to that of Dioscorides and Pliny, in the first century of the Christian era, the materia medica had become greatly enriched, and the curative effects of a large number of medicines were accurately described. Until the fifteenth century very slight additions were made in this department, but about that time the alchemists, in their search for gold and for the elixir of life, laid the foundations of chemical science, and produced the preparations of mercury and of antimony. Two centuries later (1638) the precious cinchona, and ipecacuanha (1658), were added to the treasures of our art; and two centuries later still, modern chemistry began to separate the active from the inert elements of drugs, and offer the physician more certain weapons against disease.

In the whole of their career, therapeutics advanced quite independently of pathology, to which, indeed, they have only an indirect relation, one created by the art of man. On the one hand, pathology was being perfected by the gradual separation from one another of diseases previously confounded, and the discovery of elementary morbid conditions, and on the other, a gradual improvement took place in the knowledge of the inherent powers of medicinal substances, and of their curative relations to diseases. There is no natural or essential connection whatever between disease and its remedies; the one belongs to man, the other to external nature; and human intelligence, prompted by instinct, was required to place the two in a reciprocal relation to one another. They were brought into contact by the necessities of suffering humanity, and they were linked together by a scientific bond only when the mode of action of the one upon

the other became a subject of investigation. This subject, including both their natural actions and their operation in curing diseases, involves both physiological and pathological relations. It is, in a word, the study of physiology under certain assumed conditions, and it may therefore justly claim to be a department of medical science.

I have in my previous remarks, endeavoured to illustrate the Unity of Medicine by an historical sketch of its branches which embrace the normal and abnormal conditions of the structure and functions of Man. If the estimate of medicine which the writer has attempted to give, and its spirit are permitted to sway us, the energies of the intellect are warmed by the heart, wisdom is consecrated to humanity, and as we rise in knowledge we increase in power to diminish suffering, insuring happiness to ourselves, and dispensing it bountifully to those, who shall become living monuments to attest and to proclaim.—*The North American Journal of Homœopathy*, February, 1914.

THE THERAPEUTICS OF CONSTIPATION.

By E. H. LUTZE, M.D.

It is the general opinion amongst the laity, that every one should have a regular daily evacuation of the bowels and if one fails to have this, he is not healthy, but constipated and that a cathartic is the proper remedy to cure this condition. Nothing could be more erroneous and further from the actual truth.

When the evacuation takes place but once in two, three or six days or even weeks, but is normal in form, color and consistency and is expelled with ease and comfort, it is not constipation but simply an infrequent evacuation and is perfectly normal in some very healthy individuals.

But when there is an ineffectual urging to stool, or the evacuation is painful or difficult, requiring great effort and straining to expel it, or the stool is abnormal in form, color consistency, accompanied with difficult evacuation, as it then

usually is, then we have a case of constipation, though the stool occur every day. But a cathartic is not the remedy for it, never; it may give great relief, temporarily, but never can cure.

The cathartic expells not only the stool, but also many of the vital fluids contained in the intestinal tract, which ought to be retained for the nourishing and keeping in health and strength the human body. The only real cure of constipation can be effected only by pure homœopathic treatment and I will give herewith some of the most frequently indicated remedies for this abnormal condition.

Aesculus hippocastanum: Before the stool: Frequent or constant desire, sensation as if a foreign body were lodged in the rectum, or as if the rectum were full of small sharp tacks (the prickers of the chestnut burr), ineffectual efforts for stool, severe pains in the sacrum and rectum, constriction of the rectum, it feels as if it were prolapsed, pricking, sticking pains extending to the back; all these symptoms continue during stool.

During stool: Sensation as if the rectum were obstructed by folds of mucus membrane, which threaten to rupture from the pressure of defecation, with shivering; the stools are in balls, hæmorrhoids bleeding slightly, pricking, sensitiveness to touch.

After stool: Colic at the umbilicus, tearing at the anus, reddish, painful and burning hæmorrhoids, prolapsus ani and recti, contraction of rectum, itching and excoriated feeling, nausea and vomiting. The stool is often in two colors, the first part dark, the last part light.

Aloes: Sensation of a plug or ball wedged in between coccyx and symphysis pubis; desire for stool, but only hot flatus passes with relief. Heat, soreness and heaviness in the rectum; a normal stool may pass unnoticed. Itching hæmorrhoids; in the diarrhoea of aloes flatus often passes when the patient expects to have a loose stool and the loose stool often escapes, when he thinks he will only pass flatus.

Alumina: Frequent ineffectual desire for stool, even a soft stool requiring much straining. No ability to pass a stool, until there is a large accumulation. Pressure, cutting pains and

haemorrhage from the bowels; voiding of urine while straining at stool. After stool: Long lasting pains in rectum and stomach, burning, smarting and shooting at anus, dryness of rectum, the stool is often in balls.

Belladonna: Nervous, irritable, cranky people, dilated pupils, head large and hot, hands and feet cold, startings in sleep, convulsions, or convulsive movements, pulsations of carotids, very sensitive to light, noise and touch, the stool is sometimes normal in form but green as grass. Face red and pain in the head from straining at stool.

Bryonia: Stool dark, hard and dry; baked or burned looking. No desire for stool and it is passed only with much straining, headache from pressing at stool. After stool: Pain in abdomen relieved by rest, sitting or lying; and by drinking cold water. The patient is irritable, easily angered. Faintness and nausea on rising from a recumbent position relieved by rest, cold air and cold drinks, the alimentary canal is dry from mouth to anus, the lips even are dry and peeling. Hence the desire to drink much at a time though not often, rarely there is no thirst. Worse in summer; in hot weather, the stools are usually large as well as hard and the dryness of the intestinal mucus membrane is largely the cause of the constipation. For the constipation I have found the lower potencies, the 30th to act quicker, for the diarrhoea of bryonia the highest potencies are the best.

Calcarea carb: Stools large, hard, partially digested. Involuntary sour smelling, diarrhoea alternating with constipation; stools in balls looking like lumps of chalk; offensive; smelling like rotten eggs; very hard, enveloped in mucus; alternating with fetid diarrhoea; stools gray, fecal, like clay. *Calcarea carb* is the chronic of *belladonna*.

Kali bich: Stools very hard, dry and knotty, in one mass, pale clay colored; difficult expulsion with painful retraction of the anus. After stool: Burning in anus, prolapse of rectum. Sensation of a plug in anus. Backache with nausea, stomach deranged be the mildest kind of food. Flatulence incarcerated

in stomach and bowels. Emptiness in stomach yet no appetite for dinner; fullness in the morning, sinking in the stomach before breakfast; wakes at night with great uneasiness in stomach, soreness and tenderness in a small spot to the left of the xiphoid cartilage. Sudden violent pains in anterior surface of the stomach, burning constricting pains. Palpitation after only a mouthful of food. Cutting as with knives. She was unable to digest potatoes or any starchy food. Violent, profuse and frequent vomiting, but not ropy, no catarrh of nose or chest, no thick ropy mucus, amenorrhoea for two years. Vomiting of undigested food, and bitter, sour inkish fluid.

Kali carb: Stool large, hard, dry and difficult; ineffectual desire, distress and anguish long before stool. Discharge of white mucus. During stool: Rectum feels too weak to expell the stool, protruding haemorrhoids, burning, pricking and stabbing, worse from coughing, relieved by hard pressure. After stool: Itching, cutting and tearing in anus, pain in lumbar region as if broken, night sweats.

Lycopodium: Stools hard, broken masses, evacuation small, incomplete, mixed with or followed by liquid discharge. During stool: Pain in rectum, with ringing in ears and straining at stool, evacuation only after great effort, unsatisfied feeling, as if the stool had not all been discharged, followed by painful accumulation of flatus, contraction in perineum after a scanty, hard stool; acidity of the stomach, heartburn, great drowsiness after dinner, gurgling under left short rib, pain in left short ribs, pain in left angle of colon, constipation when travelling. Accumulation of flatus which does not pass or gives no relief if it does pass.

Mercurius vivus: Hard tenacious knotty masses, small like sheep's dung, pale, white with mucus or streaked with blood, or like a narrow ribbon. During stool: Great straining with scanty stools, evacuation only after great effort, pain in the anus. After stool: Long continued urging, a not-done feeling, lasting a long time. Bleeding and ulcerating haemorrhoids, painful, not allowing the patient to stand, sit or even lie down with any comfort.

Offensive taste and odour of breath. Tongue large flabby showing the imprints of the teeth. Face and conjunctiva yellow. Constipation following after diarrhoea. Chill during or after stool. Salivation; sweat without relief.

Natrum mur: Affects the entire alimentary canal, which is dry like under bryonia. Stools large, hard and crumbling, irregular or alternating with diarrhoea. Before stool: Frequent ineffectual urging, or no desire from inactivity of the rectum, burning in the rectum. During stool: Contraction, pulsation and lancinating pain in the rectum. Pain in the head while pressing at stool. Tenesmus and haemorrhage from the rectum (China, Hammamelis. Kali carb., Lachesis). After stool: Burning, smarting and ripping up sensation in the anus, and in rectum, fissures with bleeding and smarting and burning pains. Haemorrhoids, sore and burning, Prolapsus ani. Thirst for much water to drink and often. Pain across the lower pelvis and bladder, relieved by bending forward when sitting. Worse from motion. Weakness and emaciation. Inactivity of the rectum (Alumina, Antimonium, Arnica, China, Ignatia, Kali carb., Nux vomica). No desire for stool for days and weeks. Chronic constipation. The constipation of natrum mur. is similar in many respects to that of lycopodium.

Nux vomica: Hard difficult stool, insufficient, often streaked with blood, dark brown, hard, knotty stools. Before stool: Constant ineffectual urging. Painful sensation as if the rectum were firmly closed or narrowed. Pain in the head from pressing at stool. After stool: Relief; qualmishness, in the stomach, and in abdomen with pressure upward to diaphragm and throat, from accumulation of gas causing dyspnoea; discharge of flatus gives slight relief. Alternating constipation with diarrhoea. Haemorrhoids painful and bleeding. Constipation of pregnant women and children, without any other marked symptoms. Constipation due to the abuse of coffee, peristaltic movements of the intestines diminished or reversed. Chronic constipation, all cathartics fail to produce an evacuation. Anacardium is in some of its symptoms similar to nux vomica.

Phosphorus: Stools dry and hard, tough, slender long, like a dog. Very difficult. Sticking in anus, pricking in rectum between the evacuations; blood with the stool, violent tenesmus for some time after the stool; (Nitric acid., Merc. cor.,) Haemorrhage from the anus or rectum; headache while pressing at stool. Darting pains from coccyx up the spine to the vertex, the head being drawn back by it; cutting in anus and abdomen. Violent pains at anus with movement of flatus in abdomen and a constant but unsuccessful desire for stool. Heat of the hands and anxiety relieved by warmth. Tearing in rectum and soreness after stool; rectum feels as though it was obstructed by something during the passage of the stool. The stool not being hard, or the rectum feels contracted. An acrid sore pain is felt in the rectum, continuing for some hours and extending up into the abdomen. Sore pain in the haemorrhoids for several days and when sitting or lying, with violent pressure and stitches on rising.

Pulsatilla: Stool large and hard; difficult though soft. Alternation of hard and soft stools, of constipation and diarrhoea. Before stool: Ineffectual desire (during menses). During stool: Pain in the head while pressing at stool. Difficult expulsion with painful urging and headache. Inactivity in the intestines. Bitter taste and excess of mucus in the mouth. Nausea and sour eructations. Tendency to catarrh, aggravated from fatty food, pork, cake, rancid butter, ice cream or from intermittent fever suppressed by quinine.

Sepia: Stools hard, knotty, insufficient, scanty, like sheep-dung, difficult, covered with mucus. Retarded with discharge of blood. Before stool: Frequent ineffectual desire, or only an emission of flatus with mucus. During stool: Pain in rectum extending to the perineum and vagina, shooting tearing in rectum and anus. Great straining before the stool, covered with blood and mucus is discharged. After the stool: Sensation of a weight in the anus burning in rectum and anus, haemorrhoids. Tingling in rectum with itching in anus, oozing of moisture from anus. Constipation in pregnant women and in children,

when manual assistance has to be rendered. Chronic, obstinate constipation, after nux and sulphur have failed to cure. Easy and profuse perspiration; yellow saddle over the bridge of the nose.

Silica: Large, hard, light colored masses; difficult expulsion even of a soft stool. Before stool: Faeces remain a long time in the rectum, as if it had lost the power of expulsion, with sensation of soreness. Obstruction of the bowels from inactivity of the rectum with pain and ineffectual desire. During stool: Prolonged effort, which renders the muscles of the abdomen sore, but when partly expelled, the stool slips back into the rectum. Protruding haemorrhoids which become incarcerated. Gastralgia, with hiccup and glairy vomiting. Flatulence; eructations drowsiness, languor cold extremities, loss of appetite, slow and painful digestion, often a canine hunger, which cannot be satisfied. Stitches and shooting pains in the anus. Constipation before and after the menses. Face pale earthy, copious sweat about the head, abdomen large and hard, (Calcarea carb.) Aversion to warm food. Loss of expulsive force with a large but soft stool.

Sulphur: Stools hard, knotty, dry and dark, insufficient, chestnut or olive shaped; alternation of constipation and diarrhoea. Before stool: Frequent desire with ineffectual urging, the effort at stool is so painful, that patient dreads to attempt it. Prolapse of the rectum. During stool: Straining and bloody discharge. After stool. Prolapse of the rectum. Lancinating pains from the rectum upward. Burning, sore, stinging, itching, pulsating pain in anus. Standing still for any length of time is unendurable, frequent hot flushes, burning on the top of the head and in the soles of the feet. Hungry at 11 A.M. Abdomen bloated with incarcerated flatulence, pains throughout the abdomen with sensitiveness to touch. Chronic constipation with haemorrhoids. Constipation of pregnant women and of newborn children.

Any remedy in the materia medica may be indicated in the treatment of constipation, and may cure it, but this treatise I

fear is too long already. Yet I must not forget to mention opium and plumbum, both especially useful, in the constipation due to paralysis of the rectum and often indicated in the constipation of the aged.

Clinical cases: A travelling salesman had taken all the cathartics he knew of, without result, although he had frequent ineffectual desires for stool. For want of time to question him regarding other symptoms, and as he had taken physics galore, I gave him *nux vomica* 30, three powders, to take these and call again next day. He did not call till a month later, saying the physio I had given him, had fixed him up all right. He had taken a dose that evening and the next morning after rising and before he could take his breakfast, he had to go to the toilet and had a good movement. When on his way to New York, he had to leave the "L" to seek a place of refuge and had another good movement, and again when he reached his office in the city. None of the stools were diarrhoeic and his bowels had been in fine shape ever since. Now he would like some of that same medicine to take along in case he needed it, as he had to go on the road again.

Rhus tox, cured a man of his constipation, who could always bring on an easy evacuation by taking a good walk, when constipated.

The symptom of aloes. Urging for stool, but only hot flatus escapes with relief, (also: *Spigelia*, *Ruta*, *Capsicum*, *Colchicum*, *Magnesium carb.* *Mezereum*, *Natrum arsenicosum*.) had led me not only to cure diarrhoea, but also constipation, chronic ulcer of the leg, to reduce an enlarged prostate and clear up foggy vision. Have cured with it a diarrhoea of 20 years standing.

Mr. S. act. 60 years, has suffered for thirty years with constipation and hemorrhoids, had been treated a good deal and had several operations on the piles, with only temporary relief. He came to me in December 1909, saying he had no symptoms, but he knew he was not as he ought to be and wished to be cured. I told him it would take a long time to cure him, if he had no symptoms. He said he would give me two years, did not expect

to get well any sooner, since he had been sick so long. Under remedies: *Nux vomica*, *calcareo carb.*, sulphur and others, he improved somewhat during the winter, but the constipation and the haemorrhoids remained practically the same. In April 1910, he contracted a cold, with these symptoms. Severe cough, worse out of doors, better in the house, worse lying on side and shooting, cutting pains in the haemorrhoids with each cough, better from hard pressure direct on the haemorrhoids. He received six powders of *kali carb.* 200, to take one at bedtime, and recovered completely in a few days. I saw him two weeks later, when he told me, he had never been troubled with anything since; had remained perfectly well.—*The North American Journal of Homoeopathy*, February, 1914.

EDITOR'S NOTES.

Open-Air Schools.

Quite a number of open-air schools have been established in this and in other countries, where the climatic conditions naturally lead those who can, to secure the shelter of windows and doors, as well as of roofs; yet there are schools arranged for children, who are confessedly frail of physique and often known to be affected with tuberculosis, where such wind excluders are done away with. London, Sheffield, Bradford, Leeds, Halifax, Lincoln, Birmingham, and Barnsley are not favourite health resorts known for a mild and equable climate; yet these are the places where open-air schools have or are being established. A report by Dr. Warren to the Surgeon-General at Washington gives an account of such a school in St. Louis, and the views show the snow lying thick on the ground! Notwithstanding the inclemency of the weather normally experienced in some places where open-air schools have been worked, the children prove to do well under their new conditions, and the proof is found in increasing height, weight, and also in those less tangible expressions—improved general well-being, both of body and mind. A report by Dr. Sadler gives details of the school at Barnsley, illustrated by tabular statements of the “before” and “after” condition of each child, according to the estimate of the teachers and the measurements of the doctors. At both these schools the arrangements are of the simplest—the buildings are of the temporary order, iron at Barnsley and wood at St. Louis. Both are so arranged as to give protection from sun heat and storms. The sanatorium element is marked by the provision of couches and rest-times. The dress of the children at St. Louis for the winter season is distinctly good, as exhibited in the pictures; it is called the “esquimo” costume, and consists of a long loose tunic with hood, baggy trousers, and snow boots. The time table of the Barnsley school is worth study, for over against it is given the table of an ordinary elementary school. There is no doubt as to the superior attractiveness of the open-air curriculum; some hours a day devoted to gardening and housekeeping, with a corresponding limitation of the literary work, these must be appreciated by every child. We know of one London elementary school where there are gardens; the demand for them by the pupils is great, and the work in them

is not in substitution of the usual routine. It is probable that the benefit said to be derived by the children cited in these reports is attributable to better food. In any case, the findings justify the advice given by Dr. Sadler to his council: "I strongly advise you to keep the school open for the next winter and summer."—*The British Medical Journal*, December 27, 1913.

Gifts to the London Homœopathic Hospital.

Lord Donoughmore, the Treasurer of the London Homœopathic Hospital, Great Ormond Street, W.C., has received £500 from "A Nameless Samaritan," per Dr. Neatby, towards the Appeal for £16,675 being made by the Board of Management, to name a New Children's Ward, in the Sir Henry Tyler Wing, lately added to Hospital, "The Queen Alexandra Ward," by gracious permission of the Queen Mother.

Some £10,500 has already been paid, and Lord Dysart has promised the last £1,000, if the remaining £6,000 is contributed before December 31st next.

Donations may be sent to the Treasurer, or to the Secretary, Mr. Edward A. Attwood, at the Hospital.—*The Homœopathic World*, November, 1913.

The Movements of the Large Intestine.

To the philosopher of the future, as he looks back upon the progress which has been made during the last few years in the study of the intestinal movements, there will be presented the strange spectacle of the growth of two schools of thought which, though working in apparent harmony, are yet as different as can well be imagined. The past year has seen the rise, and the very wide acceptance, of a doctrine of mechanical obstructions to the normal passage of the intestinal contents; it has also marked the free use of an eponymous nomenclature which has very little merit. That giant Vesalius has but one meagre and inconstant foramen in the cranial wall named after him, and even this, in these days of terminological reform, is like to be swept away; those with any love for the traditions of anatomy must therefore regard with horror the naming (however ephemeral the terminology is likely to be) of

chance peritoneal bands and intestinal moorings after this one and that. We would not be so pessimistic as to look on these things as longlived blots on anatomical terminology; but we would make protest against their coining. With the mechanical view in mind the alimentary canal has proved a happy hunting ground; a bend in the tube, a mechanical disadvantage, an obstructing band, an adhesion—all have been eagerly sought out, and a new terminology, mostly eponymous, has been thrust into the literature. Meanwhile, and more quietly, other work upon the passage of food along the alimentary canal has been carried out, and things only guessed at before have been patiently watched by means of the X rays. We have now a very complete knowledge of the movements which urge the food-mass onwards, and more than a guess as to the nature of the impulses which regulate these movements. In recent papers by Hertz and Newton it is made abundantly clear that the ileum possesses the terminal sphincter which was claimed by Professor Keith, as an anatomist, more than 10 years ago; and further that this sphincter governs (as Keith suggested) the flow of contents from ileum to cæcum. It is now demonstrated that this sphincter is regulated by impulses connected with the passes of food into the stomach—the gastro-iliac reflex. Normal iliac stasis is therefore to be regarded as the outcome of this regulating mechanism; abnormal iliac stasis seems clearly due to some defect of this mechanism. Again; after the cæcum and colon have become filled by the passage of intestinal contents through the ileo-cæcal valve, movements of the large intestine are apparently produced by the stimulus of the entry of food into the stomach—the gastrocolic reflex—which in most individuals results in defæcation after breakfast, although the desire to defæcate may also be manifested after other meals. A theory makes a very powerful appeal, and the clinical support which it receives is undoubtedly strong; but the risk is lest it should be regarded as the whole story. Its apparent mechanical simplicity should be in itself a warning that it is not likely to be the complete explanation of what is almost certainly a subtle vital process. The mechanical disabilities which intestinal movements are able to overcome, rather than the ready impediment of intestinal contents by bends, or twists, or turns, is the fact which strikes the observer when studying the intestinal canals of different vertebrate

types. On the other hand, common experience compels a belief in some gastro-colic reflex—a reflex which may be abnormally sensitive in conditions of so-called nervous or lenteric diarrhoea, while the detection of the vital rôle of the ileo-colic sphincter is a remarkable vindication of the findings of the anatomist. We are, perhaps, too near to the period of the actual discussion to survey opposing views in their proper perspective, and there lies behind them more than mere academic discussion. To the questions—Is intestinal stasis a complaint which falls within the province of the surgeon or of the physician? Should we attempt operative interference with the alimentary canal? or Should we attempt to re-educate a neuromuscular reflex, which from some cause or other has fallen below its normal activity?—no general answer can yet be given.—*The Lancet*, January 10, 1914.

Ants as Transmitters of Tropical Disease.

No suspicion until lately has arisen that the industrious ant might upon occasion act as the transmitting agent of infection to man. It was known that some species, such as the white ant, had very destructive tendencies in certain parts of the tropics, and that the bites of some large tropical ants caused a good deal of general disturbance, being attended with faintness and shivering and sometimes with temporary paralysis. It was also known that some savage races used the dried bodies of ants, beaten into a paste, as an arrow poison, but it is only of late that suggestion has been made that this insect might convey pathogenic bacteria to man. The ant is commonly found in and around the dwellings of people residing in the tropics. It is, indeed, a matter of difficulty to keep this insect away from foodstuffs in such houses, and it is equally difficult to keep the ant away from human dejecta when these are not properly disposed of. So that it cannot be doubted that the ant has the opportunity of carrying from infected excreta the specific organisms of disease to the food stored in human dwellings. Not long ago one writer drew attention to the possibility of the ant spreading anthrax. In 1908 Dr. Andrew Balfour, then at Khartoum, in his "Review of Recent Advances in Tropical Medicine," discussed the suggestion that ants might be to blame for carrying cholera infection from contaminated faecal matter to human food and drink. His experience was that

at Khartoum ants were more in evidence than flies, and that from their crawling habits and scavenging propensities they could play a considerable part in the conveyance of cholera and similar infections. Little or no experimental work, however, had been done to obtain proof that ants were capable of transmitting diseases to man; but in 1912 Dr. L. B. Bates, bacteriologist to Ancon Hospital in the Panama Canal Zone, undertook a series of experiments with the view of putting to the test whether or not the ant acted as a transmitting agent of such infections as enteric fever and bacillary dysentery. His results were published lately in the Proceedings of the Canal Zone Medical Association, Vol. V., Part I. His investigations were carried out with the large yellow ants which are found in and around the houses in the Canal Zone. He fed a number of these insects on bread soaked with cultures of *B. typhosus* for five days, killing and examining some of them at certain intervals, but in no instance was he able to recover the typhoid bacillus from the intestines of the ants. The experiment was carefully repeated with like negative results. He then tried to determine if the ant could carry the specific organisms on its legs or body, in a purely mechanical way, to human food. A number of the insects were dropped into a broth culture of *B. typhosus* and allowed afterwards to crawl out and walk over Petri dishes, the bottoms of which were covered with filter paper, at varying intervals up to 24 hours; after that they were placed on the media in Endo plates. The typhoid bacillus was easily found in every instance. This experiment was repeated several times, and in the majority of cases positive results were obtained. It is known that the body of the ant contains a certain amount of formic acid. Dr. Bates infers, therefore, that under such circumstances it would be almost impossible that any typhoid bacillus could survive for any length of time in the intestinal canal of the ant. He concludes that the ant under certain conditions is capable of becoming an active agent in the transmission of enteric fever or bacillary dysentery to man, but only in a mechanical way. The same is almost certainly true as regards cholera. It would be of advantage if further experimental work in this direction could be carried out.—The *Lancet*, January 10, 1914.

Gleanings from Contemporary Literature.

AN ADDRESS ON GLYCOSURIA.

Delivered at a Meeting of the Leeds and West Riding Medico-Chirurgical Society, on January 30th, 1914.

BY W. HAILE WHITE, M.D. LOND., F.R.C.P. LOND.,

SENIOR PHYSICIAN TO GUY'S HOSPITAL.

Mr. President and Gentlemen.—In this country Fehling's test for glycosuria is the one most used, but the Rochelle salt and the copper solutions should be mixed just before use; if kept mixed for weeks a brick red precipitate often appears on boiling when no sugar is present. I have known forgetfulness of this lead to disastrous results. It is common to see medical reports of life insurance cases which state that the proposer has a trace of sugar in his urine, but is otherwise perfectly healthy. I hope we shall hear how many of such cases become diabetic. No doubt in several the reduction agent is not dextrose. It is often glycuronic acid, which has nothing to do with glycosuria, often uric acid or ureates; it may be other sugars—e.g., maltose or arabinose, a pentose, the excretion of which indicates no serious disease; nevertheless, those passing it have been thought to have diabetes and have consequently been subjected to irksome and unnecessary dietetic treatment, and a suckling woman passing lactose in her urine has been said to have diabetes. Perhaps in some very few cases small quantities of dextrose may be detected because the proposer has taken sugar in excess of what is for him the normal limit of tolerance, which is that most healthy people can take about 150 grammes on an empty stomach without causing glycosuria. We want information as to whether there may not be persons whose dextrose tolerance is lower than that usually stated to be normal. I suspect there are. At any rate, we know that minute amounts of dextrose are on ordinary diet contained in the blood and excreted in the urine, although the one gramme a day excreted in healthy urine is not enough to reduce Fehling's solution. But pregnancy can hardly be considered abnormal, yet it may be accompanied, not only by the excretion of lactose, but by the passage in the urine of dextrose detectable by Fehling's solution even when the woman is on ordinary diet. We know that the thyroid hypertrophies in pregnancy and that glycosuria occasionally appears in exophthalmic goitre. Perhaps the glycosuria of pregnancy is due to this hypertrophy of the thyroid. Perhaps, too, the hypertrophy of the pituitary, which also takes place in pregnancy, is one cause of the glycosuria; however, we must remember that it is chiefly the anterior lobe of the pituitary which enlarges, but it is extract of the posterior lobe injection of which causes glycosuria; still considering the propinquity of the two lobes it is quite possible that enlargement of the anterior lobe stimulates the epithelial cells—called *pars intermedia*—which form the covering of the posterior lobe, and the colloid secretion of which lowers the tolerance for sugar.

It is often stated that in man glycosuria means hyperglycæmia. Certainly this is almost always true, but there are a few persons who excrete 1·5 grammes of sugar a day who have not hyperglycæmia nor any symptoms of diabetes. They may be suspected when it is observed that restricting the carbohydrate intake does not do away with the glycosuria. It has been suggested that this variety of glycosuria is allied to that caused by phloridzin, there being some body in the blood which increases the permeability of the renal cells to dextrose. This mild glycosuria appears to be of no clinical significance. Perhaps some life insurance examples of a trace of sugar are instances in point.

Each apparently healthy person whose urine gives a slight or suspicious reduction with the copper test should be (1) questioned as to the amount of sugar recently taken; (2) questioned as to any drugs taken; (3) examined to see if any disease or condition known to lower sugar tolerance is present—e.g., pregnancy or exophthalmic goitre; (4) it should be observed whether taking less carbohydrate controls the glycosuria; and (5) he should have the same specimen of urine examined by the fermentation and phenylhydrazine tests, for by these all reducing bodies except dextrose and lævulose can be excluded, and the separation of these two is not necessary for the diagnosis of diabetes, in which both may be passed. It must be the same specimen because probably in the early stages of diabetes sugar is not constantly present in the urine. Much hardship is often done to these proposers by the mere unconfirmed statement. "A trace of sugar," for as long as that statement is uncorrected the head office cannot accept the proposal at ordinary rates. When the proposer has once passed sugar and the examiner finds the urine free from it he must ascertain what diet the proposer is taking.

SOME DISEASES WHICH MAY BE ACCOMPANIED BY GLYCOSURIA.

We will now briefly consider some diseases which may be accompanied by glycosuria.

Exophthalmic Goitre.

Firstly, there is exophthalmic goitre. The frequency of glycosuria cannot be stated, for unless the urine of many cases were examined daily slight examples would be missed. The glycosuria may pass away as the exophthalmic goitre gets better. For example, a girl, aged 21, had exophthalmos, tachycardia, large thyroid, tremor, and diarrhœa. Six months later glycosuria appeared; soon after this she began to improve, the glycosuria persisted two years, but by the time it left her she was so well that she could walk eight miles. Seen 12 years later, she said she had been perfectly healthy all this time; there was no glycosuria. On the other hand, I know of three cases of exophthalmic goitre that have died from diabetes. 1. A man, aged 40, had exophthalmic goitre for years, but glycosuria was only noticed 12 months before I saw him; during all this time it persisted, although the exophthalmic goitre improved, so that now hardly any evidence of it could be found; he

died from diabetic coma a few days after I saw him. 2. A woman, aged 31, had a large thyroid, great tremor and tachycardia, and some exophthalmos; she improved greatly under rest; eyes and thyroid became almost normal. Eight years after I first saw her she was found to have diabetes, from which she died in two months. 3. A woman, aged 41, known to have had diabetes and slight exophthalmic goitre for eight years, was admitted into the hospital and died soon after in diabetic coma. We learn from these cases that sufferers from exophthalmic goitre may die of diabetic coma, and the strange fact that the glycosuria may appear, continue and even end in diabetic coma although the exophthalmic goitre is improving and the thyroid has become of almost normal size. Medicinal administration of thyroid may cause glycosuria, and I see no reason why it should not lead to diabetes, although I know no case in point. Anyhow, it is desirable when sufferers from myxœdema are taken thyroid regularly to test the urine from time to time and to limit the doses of thyroid so that glycosuria does not appear. As might be expected, sufferers from myxœdema have a high sugar tolerance, but a few cases have been recorded of glycosuria associated with myxœdema, but in some at least there is doubt as to the correctness of the diagnosis. There is no evidence as to how the thyroid lowers the tolerance for sugar so as to lead to glycosuria; it has been suggested that it acts through the pancreas.

Diseases of the Pituitary Body.

Secondly, we have pituitary glycosuria. As described above the colloid secretion of the pituitary which passes into the general circulation, in some animals at least, going first straight into the cerebro-spinal fluid, excites glycosuria by lowering sugar tolerance; hence when, as in acromegaly, we have enlargement of the anterior lobe of the pituitary body, this by its pressure on the colloid secreting cells excites them and so leads to an over-production of their secretion with a low glucose tolerance, consequent glycosuria, and in a severe case, diabetes; but acromegaly being rare, this variety of glycosuria is not of the same clinical importance as that of exophthalmic goitre. It is of interest that the pars intermedia of the pituitary and the thyroid have the same structure; both secrete colloid material, and an over-secretion of either lowers sugar tolerance and causes glycosuria; on the other hand, the destruction of either, as in myxœdema and hypopituitarism, causes an increased sugar tolerance. If pituitary extract were employed therapeutically for long periods we should expect to meet with glycosuria as a result. In some animals it has followed the injection of pituitary extract.

Diseases of the Adrenals.

Thirdly, it is well known that adrenalin, which is constantly being poured into the blood from the adrenal medulla, tends to lower glucose tolerance, and the same is probably true of the secretion from all the chromaffin tissues of the body. As far as I know there is no certain instance in clinical medicine of glycosuria due to increased secretion of

adrenalin; but it is given with great success in asthma, and it behoves us occasionally to test the urine of those taking it, for it may possibly lead to glycosuria. Some think that as age advances all the chromaffin tissues become more active, and by this explain the high tension pulse often seen in persons well past middle life. Garrod suggests that some examples of the mild glycosuria of elderly people are due to the same cause.

Diseases of the Organs of Generation.

Fourthly, glycosuria has been observed in disease of the female organs of generation—e.g., ovarian tumours—and it has disappeared when the surgeon has removed the tumour. Probably here we have the effect of an internal secretion.

Diseases of the Pancreas and Parathyroids.

Fifthly, whilst in the instances just mentioned we have to do with internal secretions which provoke glycosuria; that of the pancreas restrains it, hence when this is almost or completely destroyed glycosuria and diabetes appear. I find that in 14 consecutive years at Guy's Hospital there were 6708 post-mortem examinations, and that the pancreas was to the naked eye diseased in 1·2 of these, or in about 2 per cent. of all persons dying in a large general hospital. It was called atrophic or small in 19 cases; 16 of these had diabetes, and a quarter of all the patients dying from diabetes in Guy's Hospital have a small atrophic pancreas. Other pancreatic diseases will cause it, but they must destroy most of the gland. On the other hand, patients may die from diabetes and yet the pancreas may appear perfectly healthy even after histological examination; perhaps these cases are dependent upon disease of other organs influencing sugar tolerance. It is very difficult to diagnose chronic pancreatitis in any case of diabetes, but there is an impression, probably correct that it is more likely to be found if the diabetes is severe. Lately it has been suggested that cholangitis, usually the variety associated with gall-stones, may cause glycosuria because the cholangitis by spread of inflammation leads to chronic pancreatitis, and cases have been recorded in which glycosuria has disappeared after the gall-bladder has been drained. But the figures taken from the post-mortem room at Guy's Hospital do not afford much evidence of a causative relation between gall-stones and diabetes. I find that in the post-mortem room among 15,000 consecutive post-mortem examinations gall-stones were found in 476, or one in every 32 deaths; 121 of the 15,000 died from diabetes, so that on the theory of chance 4 of these should have had gall-stones while as a matter of fact 11 had, but the difference between 4 and 11 is not enough to be very convincing—that between 40 and 110 would have been much more so—especially as many of the diabetics died before the age at which gall-stones are likely, for Pavy found that among hospital patients the usual age of death from diabetes was between 15 and 40, but the age of nearly all the sufferers from gall-stones exceeds 40. Further, that gall-stones

have much influence in the production of diabetes is unlikely, for they are much commoner in women than in men, but diabetes is three times as common in men as among women. It has been suggested that the chronic pancreatitis associated with diabetes may be due to inflammation of the duodenum spreading up the pancreatic duct and sometimes to arterio-sclerosis, but I have already mentioned the suggestion that an excess of adrenalin causes both glycosuria and high blood pressure. The parathyroids have, on experimental evidence, been shown to have the same relationship to glycosuria as the pancreas, for excision of them in dogs causes it, but as far as we can tell, this fact has no application in medicine.

Diseases of the Nervous System.

Sixthly, it has been known for a long while that various disorders of the nervous system will cause glycosuria; indeed, rather over 30 years ago it was urged by some that diabetes was a disease of the nervous system. Instances in which it has followed shock and mental emotion are on record, and it has been shown by Cannon and others that glycosuria appears in cats if they are frightened by a dog. Glycosuria has been found in association with meningitis, cerebral tumours, and other organic nervous diseases. It may, if carefully sought often be found after severe concussion. But most of these nervous varieties of glycosuria are clinically unimportant, for either the nervous lesion soon kills or the glycosuria is slight and transient. We know nothing for certain as to its mode of production in man, but, because the secretion of adrenalin is under the control of the splanchnics, it has naturally been suggested that nervous glycosuria is really adrenalin glycosuria, and for this there is strong experimental evidence: or that, as the cervical sympathetic sends fibres to the pituitary and excision of the superior cervical ganglion leads to glycosuria, all nervous glycosuria is really pituitary glycosuria: or it has been thought to be due to influences reaching the liver through the nervous system and leading to a rapid transformation of glycogen into sugar.

Diseases of the Liver.

Seventhly, considering the importance of the liver as a storehouse for glycogen, it is strange at first sight that diabetes is a rare complication of organic hepatic disease, so rare that it is open to question whether there is an association of any importance. Perhaps this is because for hepatic disorder to cause diabetes we should require an exaggeration of hepatic function seen in exophthalmic goitre, and then, too, there are, besides the liver, other stores for glycogen which must quickly compensate for any deficiency of its glycogenic function, for in many hepatic disorders the hepatic glycogen is almost absent—e.g., after obstruction to the hepatic duct Bernard's puncture will not lead to glycosuria. It is true that glycosuria has been occasionally recorded in cirrhosis, acute yellow atrophy, phosphorus poisoning, and other hepatic disorders, but whether

in such cases it is disorder of the function of the liver which leads to the glycosuria is not proved. Although if the liver is diseased giving dextrose rarely leads to glycosuria, giving levulose often does, a fact which some authors say may help in the diagnosis of hepatic disorders, but others deny this. It is only fair to state that some, especially the French school, consider that many examples of glycosuria, especially those of the mild variety seen in middle-aged or elderly people who are obese and over-eat, are due to a disordered hepatic function in virtue of which sugar that should be retained as glycogen is poured into the blood, and they urge that the liver is probably the cause of the hyperglycæmia, for it is often enlarged. That it is enlarged is certainly true, for these persons often have a fatty liver, but whether this should be regarded as the cause of the glycosuria is doubtful. On proper dieting the liver becomes smaller and the sugar disappears from the urine. It has been suggested that some forms of glycosuria may be of intestinal origin, but we have no clinical evidence of this.

I have briefly reviewed the causes of glycosuria and we have seen that (1) the pancreas, and probably to a far less extent the parathyroids, by their internal secretion tend to the lessening of sugar in the urine: and (2) the thyroid, pituitary, suprarenal bodies, and possibly some of the organs of generation, by their internal secretion, to its increase. Whether all these organs maintain the normal balance by acting on each other, or by acting directly on the liver or on other parts of the body which produce sugar, is not known. Some at least of the processes causing glycosuria are under the control of the nervous system. In most cases of glycosuria it is impossible to say that any of these internal secreting organs or the nervous system or the liver are structurally diseased, and there may be causes of glycosuria of which at present we are unaware.

CAUSATION OF HYPERGLYCÆMIA.

Hyperglycæmia must be due to either (1) a diminished destruction by the tissues of the sugar in the blood, or (2) an increased pouring of sugar into the blood. Experiments on animals, although often difficult to interpret, are considered by many to show that when a dog has hyperglycæmia as a result of excision of the pancreas this is due to a failure of the tissues to utilise sugar owing to the absence of a pancreatic hormone which act as an amboceptor. Others believe that hyperglycæmia is not due to a failure of the tissues to utilise sugar but to an overproduction, and it is probable that this is the cause of hyperglycæmia in most cases of human glycosuria. The case with which in man mild examples can be controlled by diminishing the carbohydrate intake, the fact that we know that in severe cases some of the sugar in the urine comes from the protein tissues, and the fact that although the muscles are the chief users of sugar, yet diseases such as progressive muscular atrophy, muscular dystrophy, anorexia nervosa, and cancer, in which the muscular wasting is so extreme that it is difficult to imagine that the muscles are not failing

to use their usual food, are not accompanied by glycosuria, all point to this conclusion. In mild cases the sugar in the blood is due to a lowered sugar tolerance—in other words, the hyperglycæmia is due to what is for that person an excess in the food. But, as is well known, in a severe case of diabetes the sugar excreted in the urine is far in excess of that taken in the food, and we believe that in such an instance the sugar is derived from the imperfect metabolism of proteins and to much less extent of fats. Most clinical observers are of opinion that the so-called alimentary glycosuria—i.e., mere lowering of the sugar tolerance—is an early stage of diabetes in which, if the patient lives long enough, later sugar will be formed from proteins and fats, or, in other words, a simple excess of sugar in the blood appears to have a very deleterious effect in so upsetting the metabolism of proteins and fats as ultimately to lead to a still greater hyperglycæmia and kill the patient. It is universally agreed that within limits, it is wise, by dieting, to decrease the glycosuria in even severe diabetes, which again seems to indicate that in some way the mere presence of sugar in the blood is harmful. This is equally difficult to understand whether or not we believe hyperglycæmia to be due to an impaired utilisation of dextrose by the tissues, and even if this view be true it is clear that in a severe case other causes—e.g., protein metabolism—are producing an excess of sugar in the blood, and we have this extraordinary state of affairs, more sugar in the blood because the tissues cannot use it, followed by still more from proteins and fats. We should have expected that if the body was deficient in energy because the sugar in the blood was not burnt up, that was the very reason why other metabolic processes should be carried out as completely as possible. Another strange thing is that in the young the progress of diabetes towards death is rapid as compared with the progress in those over 60, in whom it is often easy to treat, so that it is difficult to avoid the belief that the perverse chemistry must differ considerably at different ages; indeed, the only form of diabetes in the human subject which even resembles that which follows removal of the greater part of the pancreas in dogs in the rapid case which we see in children or young adults, and then the resemblance is often so close that we may assume that the conditions are the same. The high incidence of diabetes in Jews, its varying incidence in different nations, its comparative rarity in women, its different progress at different ages, the way in which different diabetes utilise different sugars, all point to considerable variation in the behaviour of the body to carbohydrates. This is also seen experimentally, for if small amounts of lævulose are given to a dog whose pancreas has so far been destroyed that it cannot utilise any dextrose given by the mouth, only a little dextrose is excreted in the urine, and the greater part of the lævulose is utilized; this fact is sometimes of use in treatment. As cane sugar is in the body converted into dextrose and lævulose a diabetic may sometimes get energy out of cane sugar when he could not out of dextrose. The more we reflect, the more we are driven to the conclusion that sugar

in the urine is the result of several different disorders which we cannot with our present knowledge separate from each other. It is sometimes urged that neurogenous diabetes is different from other varieties, but that not only may the sugar tolerance be under the influence of the nervous system, but also the diabetic abnormal metabolism of fats and proteins is shown by the well-known fact that excitement, worry, or shock will hasten diabetic coma.

ACIDOSIS.

The perverted metabolism of proteins and fats, which in a severe case of diabetes is the cause of a great part of the glycosuria, results in the circulation in the blood of oxybutyric acid, diacetic acid, and other acetone bodies derived principally from fats, they are excreted in the urine, and diacetic acid is easily recognised there by the ferric chloride reaction. Generally speaking, the presence of this reaction in a strong degree indicates a serious outlook. Oxybutyric acid and diacetic acid are met with in the urine in many conditions—e.g., starvation, severe vomiting, and after anæsthetics—and when they are present the patients often have dyspnœa without lividity, indistinguishable from the dyspnœa often seen in severe diabetes. It is believed that this is due in both cases to the stimulation of the respiratory centre by the increased acidity of the blood, just as it is normally stimulated by CO_2 and by lactic acid after severe exercise. Further, the dyspnœa of heart or renal disease when there is no lividity and the dyspnœa of high altitudes are believed also to be due to an increased acidity of the blood. All these forms of dyspnœa are therefore due to acidosis. Recently it has been shown by several observers that in diabetic coma, in which this form of dyspnœa is very striking, the alveolar air contains much less CO_2 than normal. Dr. E. P. Poulton, formerly my house physician, now medical registrar at Gny's Hospital, has shown by many observations, which will shortly be published, that this diminution of CO_2 in the alveolar air precedes the onset of coma and may be used to foretell it. He has devised a simple apparatus by which the alveolar CO_2 can be easily estimated. This is therefore an additional means of clinically telling when coma is imminent. The suggested explanation is that the increased acidity of the blood excites the respiratory centre to great activity, and in consequence of this increased pulmonary ventilation the CO_2 is got rid of rapidly. We must allow that the abnormal acids of the blood cause the dyspnœa of diabetics, but whether they produce the fatal coma itself is doubtful. Coma is far commoner in diabetes than in other varieties of acidosis; giving enormous quantities of alkalis quite fails to save most cases of diabetic coma. Oxybutyric acid itself is not a coma-producing poison, and as Beddard says, coma is not seen in scurvy in which the alkalinity of the blood is much diminished. All we can say is that the cause of diabetic coma is unknown, but it is bound up with a condition of acidosis. We should never forget it is liable to be produced by suddenly withdrawing carbohydrates from the food.

TREATMENT.

Turning now to the treatment of glycosuria. The influence of the nervous system is well exemplified in the benefit that follows a tranquil life. A moderate amount of work without any anxieties, excitements, or worries suits best. I know a busy medical man who suffers from glycosuria which always disappears when he takes a restful holiday, although he does not alter his diet. The bad influence of excitement is seen not only in its effect on the sugar, but it is well known that it will induce coma. A long journey to see a celebrated physician brought on coma fatal in the physician's house. Although, unless the patient is very weak, some mental and muscular work is desirable in order to maintain the general health, yet both must always stop far short of fatigue, for he is losing much energy in the unoxidised sugar passed in the urine, and if the fault is that his muscular metabolism is disordered so that the muscles are not able to utilise the sugar brought to them it is easy to believe that it cannot be a good thing to make them do much work. It is clear that early hours and a country life are better than a town life, and, bearing in mind the liability of diabetics to tubercle, plenty of fresh air is desirable.

Mild Glycosuria.

The least serious variety is that in which the patient is over 50 and passes a little dextrose and no diacetic acid in his urine. Such a person, who often overeats, is probably only an example of the fact that while in the young sugar tolerance is high—as seen in the large amount of carbohydrate in comparison to their weight that children can eat—in elderly people it falls, although there are many adults who have an excessive craving for carbohydrates almost as strong as that which some have for alcohol. Usually this mild glycosuria is easily controlled by diminishing the sugar consumed, but it may be necessary to take less starch also. It might be urged that such a patient was only, so to speak, wasting the sugar that passes out, and therefore the intake need not be diminished, but, as we have seen, all clinical experience points to the fact that the long continuance of hyperglycæmia due to excessive intake of sugar may lead later to profound metabolic disorders shown by the presence of sugar in the blood derived chiefly from the proteins and to a less extent from the fats of the body and oxybutyric acid and diacetic acid from the fats.

Treatment of More Advanced Cases.

Supposing the illness to be more advanced than in the slight case we have considered, the patient should take his ordinary diet and have the total sugar in the urine estimated daily for the first three days of observation. We thus get the average daily sugar output on ordinary diet. Then the carbohydrate in the food should be slowly diminished, and unless the case is severe we shall reach point at which no sugar appears in the urine:

often this is not attained until all, or almost all, carbohydrates have been taken out of the diet. Patients frequently fail to take enough fats and proteins to make up for the loss of carbohydrates. Fats such as butter, bacon, fat ham, cream, and olive oil should be consumed in abundance if they can be digested, for they have double the energy yield of proteins. Some think that part of the sugar in the blood in diabetics may come from proteins of the food, but this is not a serious source of sugar in a moderate case, and proteins should be taken. The loss of bread is so keenly felt that proteins are usually taken partly in the form of diabetic breads and biscuits. It should be remembered that all these contain some carbohydrate, but with the best varieties it is very little, and none should be used that contain more than 5 per cent. Every medical man should occasionally have analysed any diabetic foods his patients are using, for there are on the market from time to time preparations sold for diabetics containing mischievous amounts of starch. Patients vary much in their ability to eat these diabetic foods; none are really nice, but many varieties are sold, and usually the patient can take one or the other, especially if plenty of butter is used, or if all are still repugnant some of the diabetic jams or marmalades which contain no sugar and are sweetened with saccharine may be used to render them palatable. If it is desired not to allow any milk because of the lactose in it, one of the sugar-free milks in the market or washed cream mixed with albumin water made from white of egg may be given. Alcohol, being a food which entails no digestion, may be allowed, but, of course, not in a form which contains sugar; good whisky and water is as suitable as anything. When the patient has reached the diet on which no sugar is passed he should be kept on it for two or three weeks according to the severity of the case. Generally by then his sugar tolerance will be improved so that gradually some sugar may be added to his diet without causing glycosuria. I usually begin with levulose, because many but not all, diabetics bear this better than dextrose; a weighed quantity of either the solid or liquid form may be stirred up in tea. I have given dahlia tubers, for their starch in inulin, which is converted into levulose. They may be steamed like potatoes, but not many patients like them, although they were a fashionable vegetable in France before the Revolution. Soya beans, too, ground into a flour may be tried, for they contain less carbohydrate and more fat than almost any vegetable. Some patients can take fair quantities of skim milk without increasing glycosuria (hence the milk cure) others can take oatmeal (hence the oatmeal cure), others, potatoes (hence the potato cure). Boiled oatmeal only contains 11 per cent. and potatoes only 18 per cent. of carbohydrate. If small quantities of any of these can be given without increasing glycosuria a little ordinary bread may next be tried, for patients bitterly feel the loss of their bread. The medical man must crush the belief the public have that toast is allowable for diabetics. It contains a little more starch than bread, and, like bread, may only be given in such small quantities as not to lead to increased glycosuria.

When we have found the daily maximum number of grammes of whatever carbohydrate the patient can best take without increasing glycosuria, we may allow him in addition to his diabetic diet just under this number of grammes of that carbohydrate.

Severe Cases.

In many instances we find it impossible by reducing the carbohydrate in the food to cause the complete disappearance of sugar from the urine, for some of it is derived from proteins and some from fats. Then it is best, after slowly reducing his carbohydrate, to keep the patient for a time on such a diet that further diminution of the carbohydrate in the food does not lead to further lessening of the glycosuria. If this is done for some weeks it will often be found that the patient can then take, without increasing his glycosuria, additional carbohydrate, as, for example, oatmeal, which we have seen diabetics may bear well; if so, this will all be to his advantage. Such a case demands an estimation of the nitrogen excretion and a knowledge of the nitrogenous intake—indeed, as a matter of interest this is desirable for most cases except the mildest—as part of the sugar comes from protein both of the tissues and the food. The amount of sugar that may be derived from protein is obtained by multiplying the number of grammes of nitrogen in the urine by, according to some the figure 5, according to others 3.5. It is useful, in order to watch the progress of a case, to divide the grammes of sugar in each 24 hours' urine by the grammes of carbohydrate in food + possible grammes of sugar from protein. To avoid fractions it is customary to multiply by 100. The result, called the coefficient of the excretion of dextrose, gives an indication of the progress of the case. The lower it is the better for the patient.

If the presence of a large amount of diacetic acid or any other reason makes us apprehensive of coma we must go very carefully in the reduction of carbohydrates, for reduction, especially if extreme or sudden, is very prone to lead to coma; indeed, as is well known, coma is often heralded by a spontaneous drop in the sugar in the urine, and then giving the patient sugar does not bring him out of the coma. In a severe case it is bad treatment to try and get rid entirely of the sugar from the urine. In milder cases the patient may sometimes be cut entirely off food for from one to three days for a time (Guelpa treatment), being allowed, however, water and tea to drink; this often facilitates considerably the disappearance of sugar from the urine. Hence in some "cures" the patients have starvation days from time to time, but of course we must be on the alert for signs of acidosis.

It is clear that to treat properly cases of glycosuria which are not mild attention must be paid to many details. The whole 24 hours' urine must frequently be saved, the sugar and nitrogen in it quantitatively estimated accurately, the carbohydrates and proteins allowed must be weighed, experiments must be made to see which variety of carbohydrate the

patient can deal with best ; it is well also to know the caloric value of his daily diet, and the patient should be carefully weighed every week. All this is very difficult to carry out in the patient's own private house. Some patients are so ill that they ought to go into a hospital or nursing home where these observations can be made ; but a great many are not sufficiently ill for this, nor is it desirable, for they should be up and ought to be a good deal in the open air taking exercise. For them some home or institution in the country at which the urinary analyses and experiments with different foods could be properly made in highly desirable. Such an institution should have a medical officer who is a skilled analyst and is specially interested in and competent to deal with dietetic problems, and should make a particular point of the preparation of meals for diabetics. A patient would stay at such a place until it had been found which diet most satisfactorily controlled his glycosuria, for again it is worth while to remind you that different diabetic patients deal differently with the various varieties of carbohydrates, and in many instances carbohydrates should not be entirely withheld. When the diet had been found which suited the patient best, then he could return to his home and his medical attendant with detailed instructions as to how he should live. The mild cases in elderly people which are unaccompanied by any oxybutyric acid, and in which the little sugar that is passed is easily controlled by diet, need hardly go to an institution ; they can be treated at home. As might be suspected, the patient with a comfortable income and ample leisure does best. The treatment of poor patients suffering from diabetes is very unsatisfactory, for although we may do them much good in the hospital, yet when they get outside it is almost impossible for them to afford diabetic foods, and many of them would not eat them even if they were provided for them. When these poor people are away from the controlling influence of a medical man they sooner or later take unsuitable food, and they cannot lead the quiet and easy life that is so necessary.

The Use of Drugs.

I have not said anything about drugs in the treatment of glycosuria, for they are of little importance in comparison with diet ; patients very much in the readiness with which they respond to drugs, and it is impossible to tell beforehand whether or not drugs will benefit. But opium and codeia certainly sometimes help to reduce the sugar in the urine, nor, as far as I know, does either ever become a habit with a diabetic, and although there is a strong tendency to become comatose, yet I have never seen opium poisoning in a patient with diabetes. Aspirin is reported to diminish glycosuria occasionally.

Coma.

If a patient is in coma probably it is very rarely that we can save him, but as in such a condition the blood contains much oxybutyric acid, the

attempt may be made to neutralise this by giving plenty of bicarbonate of soda. I usually give it in milk, for it is undesirable that these patients should not take any carbohydrate—in a bad case 80–100 grains may be added to each pint and the patient may drink three pints a day. Generally polyuria is present and so fluid is absorbed fast from the alimentary canal; therefore it is usually unnecessary to inject alkalies directly into a vein. If put under the skin they may cause sloughing; if for any reason they cannot be given by the mouth they may be given by the rectum. When, however, the patient is merely liable to occasional drowsiness, or coma seems likely either from the case with which a ferric chloride reaction appears, or from the presence of sickness and abdominal pain, or because the case is very severe, or because the alveolar CO_2 is a little low, then much may be done to avert it by keeping the patient quiet both bodily and mentally, and by giving milk containing plenty of bicarbonate of soda. I have known patients who seemed liable to coma improve very much on such treatment and get well enough to leave the hospital. As excitement predisposes to coma bicarbonate is often desirable on admission to hospital or before an operation. Pyrexia may lead to an increase or to a admission of the sugar. During an influenza epidemic a lady, not known to have diabetes, had fever, which was rightly thought to be due to influenza. After four days she became drowsy. The urine was tested; it contained no sugar, and so diabetic coma was excluded. The urine was not then tested with ferric chloride. The next morning she was comatose. The urine gave an abundant ferric chloride reaction, a minute trace of sugar was found in it, and the breath smelt of acetone. Here, no doubt, the pyrexia contributed to the disappearance of the sugar, but forgetfulness of the fact that absence of sugar may indicate the oncoming of coma prevented the testing for diacetic acid on the first occasion, and hence the correct diagnosis of influenza occurring in a diabetic subject was for a few hours overlooked.

I have already urged the probability that coma is only associated with and not directly due to acidosis and the extreme improbability of recovery from it. Still I remember the case of a young woman suffering from diabetes who was pregnant. Towards the end of pregnancy she became comatose. Caesarean section was performed, the coma gradually passed away, and although still diabetic she was alive a year after the confinement and the child was well. She was able to have all the ease and comfort that money could buy.

PROGNOSIS.

The main outlines of the prognosis are well defined, but there are many exceptions. The younger the patient the worse the prognosis; this is nearly always true, but I knew a child of about a year old live a year, and one of five who also had phthisis lived considerably over a year. At the other end of the scale we have the elderly man whose sugar is easily controlled by diet; usually he passes no diacetic acid; he nearly always

does well. Indeed, it is highly probable that a number of elderly persons, men especially, have a little glycosuria, but they go to their grave without its ever having been suspected, and, as far as we know, without its ever having done them any harm. Between the extremes of childhood and people who have passed the fifth decade, the younger they are the worse the outlook ; it is especially bad if they have wasted rapidly, if they have much diacetic acid, if they are often drowsy, if they have complications—e.g., phthisis,—if they have an extreme degree of lipæmia—as, for example, when it may be seen in the retinal arteries,—or if they must work hard for their living : but in most cases it is impossible to give an opinion until the effect of treatment is seen. I know persons who are alive and in fair health, although they have had diabetes for 20 years and whose urine always contains some sugar and often a little diacetic acid, but then they have always been very careful to carry out the treatment ordered.

CONCLUSION.

The time that should be taken by the opener of a debate has come to an end. I must ask your forgiveness for the incompleteness of what I have said, but I would plead as an excuse not only my own imperfections but also the extent and difficulty of the subject. About 50 years ago Sir William Gull asked : “What sin Pavy or his fathers before him had committed that he should be condemned to spend his whole life seeking the cure of an incurable disease?” Pavy, with steadiness of purpose, probably unmatched, worked at the subject from the age of 23 till after his eighty-second birthday, but neither he nor the many hundreds of others who have tried to unravel it have yet succeeded in fully explaining why sugar is sometimes found in urine, nor have they discovered how to cure diabetes.—*The Lancet*, February 7, 1914.

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PREMATURE OLD AGE.

BY E. DOUGLAS RUDDEROW, M.D.

To the observant physician whose experience extends over a period of fifteen or twenty years in the practice of general medicine, there must, at times, come a realization that in that time the practice of medicine itself has changed very greatly.

Our methods have been revolutionized by the bacteriologist, chemist and general scientific investigator, and with all this has come a change in the classes of cases that the internist is called upon to treat.

Tuberculosis, diphtheria, typhoid and a host of other infections have decreased in frequency of occurrence and virulence, but side by side with the diminution in the infections there has apparently occurred an increase in the frequency of those degenerative changes in the heart, arteries and kidneys, changes which are more or less inevitable in old age but which may, I think, be properly considered premature when present in persons in middle life.

These changes begin often in the kidney as a chronic interstitial nephritis, with subsequent inevitable hyper-arterial tension and atheroma, followed by cardiac dilation, and marked renal insufficiency, or perhaps the occurrence of apoplexies in various parts of the body. These changes, when considered

together as an entity, form a picture which is being presented to our observation with ever increasing frequency. It may be that the conditions do not prevail more than formerly, perhaps our perfected methods of diagnosis have only made our recognition of them more sure; in any event, there are many persons exhibiting presenility and in this paper I will endeavor to set forth a few of my own observations, hoping thereby to stimulate a profitable discussion of this important matter.

The causes of pre-senile changes are veiled in obscurity, for no class of persons appears to be exempt; if we assume that high living and a sedentary life will produce these results, what shall we say when precisely similar pathological findings are disclosed in the body of one whose life has been one of toil and privation?

Alcohol, tobacco, tea, coffee, are all blamed and yet one of the most marked cases of arterial and renal degenerative changes that I have ever seen occurred in a woman who has never used any of these. The rich and the poor, men and women, seem alike prone to present these evidences of premature old age.

But, if the cause must remain unknown, the treatment must ever remain empirical or merely symptomatic or expectant, the unknown cause continuing to act as before in antagonism to our remedial efforts, and it is therefore of great importance that we should, if possible, go to the root of the matter and disclose the origin from which these degenerative processes arise.

What a field for the investigator. What a triumph for that man or woman who can find a specific for pre-senility; at whose magic touch the stiffened arteries, the shrunken kidneys and the weary heart itself shall cease to be incompetent, or their further degeneration prevented.

A day may come when the infant, fed from birth upon specific bacilli, may pass its life free from degenerative change, but until some such revelation is granted to the human race, we must I think, content ourselves with more or less disappointing generalities.

What, then, is the cause of arterial degeneration, contracted kidney, and senile heart?

I would answer, mal-adaptation.

Mal-adaptation of the individual to his occupation, his diet, or geographical location, or any other of a host of possible mal-adaptations such as civilization and the necessities of life are forever forcing upon each member of the human family. Civilization itself is often hard to bear, our telephones and motor cars, our rapid and efficient means of transportation are tyrants, after all, enabling us to do a giant's task each day but at the expense sometimes of something within us to which we vaguely refer as nervous force but about which we really know nothing at all. And so modern science, while enabling the human race to vastly extend its activities and avoid many of the ancient evils by which it was formerly overcome, has another side also, and it seems at times that while we have learned to avoid the Scylla of excessive infantile mortality we are in danger of succumbing to the Charibdis of pre-mature old age.

* TAKING THE CASE.

It has been my experience that these patients do not seek medical aid because they are conscious of any premature failure of their vitality, indeed, there are many who seem to resent the idea when the matter is first brought to their attention.

They will often display the greatest concern about some comparatively trivial ailment, but are quite uninterested when the physician attributes it to a general failure of the cardiac and renal functions, with the lessened resistance and proneness to disease which such fundamental weakness entails.

Indeed, the careful diagnostician is lucky if he escapes the odium of being considered an alarmist.

While serving as a substitute some years ago, in the Vanderbilt Clinic of the College of Physicians and Surgeons, I was greatly impressed with the methods there employed when seeing a patient for the first time. The patient was thoroughly examined irrespective of what he said. Nothing was taken for granted. The man with a headache was stripped and as carefully gone over as the man with a cough, both were made to furnish urinary

specimens and every means was taken which could shed any light upon the case.

And the Clinic prospered and waxed strong in the estimation of the thousands of afflicted ones who thronged its corridors. And why? Because in that clinic were disclosed many things; coughs were often cured because the treatment was addressed to the heart. Indigestions of long standing were relieved in the same way and many a case of supposed rheumatism of the lower extremities was sent home with arches under the insteps.

And so it has been my own endeavor to examine as thoroughly as possible all new patients making a record of the condition of the heart, lungs, kidneys and blood pressure, using rubber outline and diagrams for the graphic recording of the findings and filing it all away for future reference.

And it has usually been the blood pressure records that have called my attention to the underlying conditions present.

Types of Cases. These cases seem to resolve themselves into two general classes which may be called the compensated and the uncompensated.

The compensated cases often appear to be in good health, there are few subjective symptoms and the individual does not consider himself sick.

But upon taking the blood pressure, we find that it is at a tension of perhaps two hundred millimeters, and upon examining the heart we find the evidence of a large and strong heart with a powerful muscular element to the first sound, and an accentuated aortic second sound, the latter due, I presume, to the pressure against it as it closes.

The urinary analysis discloses a low specific gravity, with an increased total amount for the twenty-four hours, a trace of albumen and perhaps a few hyaline or other casts, the amount of indican is too high and the total solids, and urea decreased in amount. The decrease in urea is often very marked, some of my cases having an excretion of only one-tenth per cent.

Such a person would require no less than sixteen such kidneys to bring the urea output up to normal.

And at this point I wish to speak of a tendency, borrowed I think from the Germans, to belittle and consider as of no account the amount of urea which a patient excretes!

Urea being the chief organic constituent of urine and the index of nitrogeneous excretion, seems to me to occupy a place of great importance.

No one at present disputes the fact that the kidneys are essential to life, and therefore their most important excretion must be important also, indeed the quantitative estimation of the daily output of urea when considered with the other known facts about the patient, his diet, exercise, etc., forms our most reliable index to the efficiency of these organs.

The presence or absence of albumin and casts merely indicates the presence or not of an irritation or inflammation but does not tell us how the kidneys are excreting.

These compensated cases frequently present evidences of arteriosclerosis, the radials are hard and the temporal arteries tortuous. The X-ray disclosed a marked arterio-sclerosis of the posterior tibial artery in one case while we were looking for something else. But there must be many cases where the assumption that arterio-sclerosis is present must be after all but a conjecture, as many of these vessels are of course too remote from the surface to admit of our examining them minutely during life.

The factors present in these cases which I have called the compensated ones, are, therefore, a pair of kidneys, inefficient and probably contracted, an arterial system more or less rigid and an hypertrophied heart.

Why do not these persons become uraemic?

They may, if for any reason their equilibrium is destroyed by excesses in diet or exercise, either or both of which will throw into the circulation an excess of waste material.

Ordinarily, however, their urea excretion, low as it is, does not seriously inconvenience them and it seems to me that the skin and bowels must help out the kidneys, in these cases.

The chief danger which seems to threaten these people is arterial rupture and hemorrhage, the strong hypertrophied heart,

weak and hardened arteries and contracted kidneys together with the increased blood pressure, which must, I think, be considered in itself compensatory, form a group of conditions which greatly predispose the individual to this accident.

Such hemorrhages may of course occur almost anywhere in the body. Some of my cases have presented evidences of such bleedings in the optic tract, causing an homonymous hemianopsia, into the cerebrum followed by complete hemiplegia, into the spinal cord with more or less complete paralysis below the point of supposed rupture, into the retinae, and into the stomach.

Many of these cases, however, do not have apoplexies but gradually retrograde into the second class which I have called the uncompensated ones.

The lack of compensation may be cardiac, in which event the heart ceases to be able to meet the demands made upon it and the blood pressure falls to, say, 120 millimeters.

Now this pressure, while ample in a person of sound arteries and kidneys, is inadequate in those whose renal and arterial systems oppose a great resistance to the passage of the blood through them. Such a person, while unlikely to have a rupture of a vessel is very apt to become uraemic and dropsical, as well.

Lack of compensation, may, I believe, also occur by reason of a failure of either the skin or the bowels to adequately aid the crippled kidneys.

A prolonged period of constipation may therefore conceivably permit uraemic symptoms to appear.

Likewise a failure of the sweat glands to functionate, either from some particular cause, or from the onset of cold weather, may, I believe, bring about a similar result, and it is my belief that these cases are in greater danger during the winter months.

Some time ago, in a paper presented to the American Institute, I called attention to the great variations of pressure to which the human body was subjected, and mentioned the fact that at the sea level the average individual sustained an atmospheric pressure of no less than thirty thousand pounds, and that a barometric variation of one inch, a very common occurrence,

would increase or diminish this pressure to, the extent of one thousand pounds.

While 'atmospheric pressure is entirely' without the realm of our control, I think these facts are of interest to us and may explain in some measure the reasons for the discomfort and real danger which sudden changes in the barometer may portend to some patients.

The diagnosis in these cases is made readily enough, the urinary analysis, blood pressure findings and cardiac signs are easily obtained and interpreted.

Prognosis: This would naturally appear to be bad in view of the fact that we are dealing with bodily changes which we have been taught to consider as incurable; we have been taught that a contracted kidney, for example, cannot regain its normal form and functions, that hardened arteries do not become elastic again.

And yet we see cases in which in spite of this dismal outlook there does appear to be some sort of rejuvenation taking place. May it not be that Nature which extends to many of the organs such marvelous powers of recuperation has means of rejuvenating arteries and kidneys as well?

The sceptic will deny this. I would have denied the possibility of such a thing myself a few years ago and would have concluded that where improvement did occur along certain lines then my diagnosis itself was at fault, that the patient did not have what I thought he had. But I am beginning to think otherwise, and it sometimes seems to me that the "*Vis Medicatrix Naturae*" will help out not only weary livers and stomachs but hard arteries and kidneys as well.

Treatment: Before endeavoring to solve a problem, we must, I think, distinctly understand what the nature of that problem really is. Given a man with high blood pressure, arteriosclerosis and contracted kidneys, what are we to do?

In the presence of an apoplexy, our imperative duty is to reduce the blood pressure at once. I have invariably done this by administering one drop of *oleum croton tiglium* combined with four drops of olive oil either in the form of a capsule, if

the patient could swallow, or by placing the mixture on the tongue where deglutition was impossible. This old method with which you are all familiar, no doubt, should not be used in cases of gastric or intestinal haemorrhage, but in apoplexies of other portions of the body it seems to me to present many advantages.

It removes from the body considerable quantities of water and at the same time completely sweeps out of the bowel any putrefactive material there present. I have seen the blood pressure fall from two hundred and ten to one hundred and forty in five minutes following the complete evacuation of the bowels by this simple procedure. Venesection I have not employed, it takes from the patient not only water but the elements of blood itself. I can readily understand, however, that where no anaemia is present this procedure would be of use. But it does not evacuate the intestinal canal of the gas and debris—a most important matter.

But the vast majority of these cases do not come to us because they have apoplexies, but because they are suffering from the consequences of an obstructed circulation, the hardened arteries and kidneys opposing a resistance to the heart which makes high blood pressure with all its evils and dangers a practical necessity if the circulation is to continue to be carried on at all.

Now high blood pressure is easily reduced, a well directed blow on the head with an axe will reduce these patients' pressure to zero and it will stay there, too. But the man himself will be dead.

So, also, we may reduce the pressure by the use of cardiac depressents but what will happen? The pressure being inadequate, the kidneys will become inadequate also, and the patient be in danger of uraemia. Or suppose we resort to vaso-motor dilators, such as nitro-glycerine for example? The action of drugs of this class is very short, the dose must be repeated frequently and after all, what have we accomplished? We have gained a slight reduction in the pressure but we have also paralyzed the circular fibres of the blood vessels and rendered them less able to withstand a subsequent increase in pressure.

The iodides of potassium and sodium when given in large doses, possess the property of lowering blood pressure but as these drugs are excreted largely through the kidneys, it would seem that there might be harm done in this way. In one case it seemed to me that the administration of the iodide of sodium in dosage sufficient to reduce the blood pressure twenty millimeters, also induced an irritation of the kidneys as shown by an increase in the amount of albumen and casts in the urine.

Now I do not wish it to be thought that I consider all these drugs as harmful, they have their places, but I do believe that in addressing our treatment primarily to the blood pressure we are putting the cart before the horse. If we can, instead, relieve the obstructions in the circulation, if these rigid arteries may be rendered more elastic, if these shrunken kidneys can be made more normal, then it seems to me we are on the right track and the blood pressure will take care of itself.

Can this be done? I wish that I could answer surely in the affirmative. Thus I believe, that much can be done for both arteries and kidneys by giving them physiological rest.

And to this end the diet must claim our first thought.

While I believe that these patients do well, as a rule, on a diet in which the nitrogenous elements are eliminated, or upon a purin-free diet, still there are some cases in which the complete withdrawal of all nitrogen is unwise. We have the heart to consider and if this organ becomes weak then our whole plan falls to pieces at once. Says Sir William Roberts: "Nowhere, perhaps, is it more necessary than in gout to consider the man as well as the ailment, and very often the man more than the ailment."

Substituting "pre-senility" for "gout," I believe Sir William's statement holds good here also.

Exercise. These individuals must not over-do. A slight over-exertion often produces a mild toxæmia due to the diminished power of exertion, evidenced by irritability, muscular twitching of the face, etc., a profound over-exertion may result in those greatly exaggerated nervous and muscular phenomena which constitute a uræmic convulsion.

This paper is growing too long and so in closing I will content myself with a few conclusions.

I believe that our most successful method of treatment in presenility is in relieving the arteries and kidneys of much of their work.

The patient must be made to understand that his condition is one the onset of which covers a period of many years, that it is progressive unless checked, and that he must, if possible, divest himself of as much care and responsibility as possible.

He must be taught the value of his diet, his bowels must be made to act freely, and he must be made to sweat.

The average person in this climate perspires but little during the winter months, the average well-to-do persons perspire but little anyway; the pre-senile man must perspire daily, winter and summer, and to that end I have these patients take a daily sweat bath at home. There are many little simple cabinets made for the purpose and it is extraordinary to see how the sweat glands will hypertrophy under this treatment, the patient acquires the ability to perspire freely and his kidneys are rested thereby.

That the high-frequency currents are valuable in these cases cannot be denied, they reduce pressure and induce a gentle sweating at the same time, but how they act we do not know.

I feel that this paper is fragmentary, there is so much to say on this subject.

In conclusion, then, we must treat the man, not the disease, we must at first see these patients often, daily if need be, for weeks, we must have frequent and accurate urinary analyses, with careful quantitative estimations of the urea, we must regulate and prescribe, from day to day, always with the idea in mind of taking the load from the circulation and kidneys.

And I am sure the results will be gratifying when the blood pressure can be reduced from over two hundred to one hundred and twenty, and when at the same time the urea output can be increased from one-tenth of one per cent to nearly two per cent, we may, perhaps, begin to hope that even the kidneys are not beyond all hope of repair.—*The North American Journal of Homeopathy*, January, 1914.

HEREDITY.

BY CONRAD WESSELHOEFT, 2ND, M.D.

The subject of heredity has been studied by scientists for almost a century, but the subject of eugenics is practically just awakening. One might almost say that the study of heredity has led to the study of eugenics. Heredity defined is "the organic or genetic relation between successive generations," and inheritance means "all that the organism is or has to start with in virtue of its hereditary relation to parents and ancestors." "By a congenital character we mean one demonstrable at birth, which is not necessarily germinal, being often due to peculiarities, e.g., infection, poisoning or mechanical injury during prenatal development."

The subject of heredity is so intimately connected with certain fundamental problems of biology that we must turn for a moment to a consideration of the living cell and sexual reproduction.

Life itself depends upon the interactivities and interrelations of an indefinite number of complex substances, that is, the co-ordination of these substances chemically and physically, and none of these by itself can be termed living. In the same way we cannot turn to any part of a living cell and say that it is the vital centre. The conception of protoplasm is hypothetical.

In the same way it must be understood that a germ plasma is hypothetical. Here again we cannot say that this or that portion is the essential substance in reproduction, even though we assume that the physical basis of germ plasma apparently lies in the stainable nuclear bodies or chromosomes. Accordingly we must hesitate in stating that this or that part of germinal matter is the exclusive vehicle of hereditary qualities.

In most animals there is considerable difference between the ovum and the spermatozoon, the former being relatively large, passive and laden with yolk, while the latter is relatively minute,—in some cases it is less than a millionth as large,—adapted to active locomotion and is without reserve material.

Let us review as briefly as possible what happens when the two unite, in order to prove our theorem that all the parts of germ plasma work co-ordinately, and to appreciate so far as possible the role of the various constituents of the germ cells. I quote from J. A. Thompson. "When a spermatozoon, outstripping its fellows (for there are usually very large numbers), reaches an ovum and bores its way into it, the cytoplasmic flagellum is left behind, having performed its function, and the sperm-nucleus and the ovum-nucleus move towards one another. By a rapid change in the periphery of the ovum, the enveloping membrane becomes firmer, and the ovum becomes non-receptive to other spermatozoa. When several effect entrance at once, abnormalities usually result. In the mature ovum there is no centrosome. It was originally present, it disappears. The spermatozoon, however, introduces, along with its nucleus, its centrosome, and this divides into two. The two centrosomes appear to take an active part in the approximation and intimate apposition of the maternal and paternal chromosomes, and in their subsequent partition between the first two daughter cells.... As the ovum is much the larger, it is believed to furnish the initial capital—for the early development of the embryo. From both parents alike comes the inherited organization which has its seat (according to most biologists) in the readily stainable (chromatin) rods of the nuclei. From the father comes—the centrosome which organizes the machinery of division by which the egg splits up, and distributes the dual inheritance equally between the daughter cells."

From this we may conclude that the cytoplasm and centrosome are essential to the chromatin, and therefore are essential to the inheritance, and any deficiency in any of these factors would be exhibited in the inheritance of the fertilized egg-cell. But we may also assume that, providing the centrosome and cytoplasm are not deficient, the germ nuclei are the bearers of the hereditary qualities. This is borne out, at last in lower animals, by an ingenious experiment of Boveri who fertilized the enucleated egg fragments of one species of sea urchin with

spermatozoa of another species, and obtained dwarf larvæ which showed, except as regards size, the paternal characters only."

Before leaving this part of our subject it will be well to recall to your minds that "every species of plant or animal has a fixed number of chromosomes, which regularly recurs in the division of all of its cells, and in all forms arising by sexual reproduction the number is even. But "there is a reduction of the number of chromosomes in the ultimate germ cells, to one-half the number characteristic of the somatic cells," so that by their union the characteristic number is resumed in the offspring. The number of chromosomes in the shark, for instance, is thirty-six, in the ascaris four, while in man, pig, ox and onion the number is sixteen. This seemingly revolting comparison only goes to show that we have much more to learn about the intricate structure of the chromatin rods. Suffice it to say that our imagination is sufficiently taxed when we assert, as we must, that our inheritance is condensed into a germ cell.

Inheritance is in a certain sense not dual but multiple, for we have to consider the transmission of ancestral characters which may not be exhibited in the immediate parents. Consequently, as no two parents are entirely equal,—a fact which becomes more and more apparent the higher we go in the animal kingdom,—each generation is a new creation. This may be carried still further, for no two germ cells of the same parent can be said to be entirely equal; hence the difference in brothers and sisters in the same litter. Moreover, twins resulting from the union of two spermatozoa with one ovum are by no means exactly the same. Therefore we may say that each new offspring is unto itself a new creation.

This brings us to two great problems. Variation and Evolution. Variation as we have already implied is constant. Evolution, which is the result of variation, is also constant. The "struggle for existence" and the "survival of the fittest" do not take place merely between different species, but as Lancaster points out, "between individuals of the same species, brothers, sisters and cousins." To quote from Saleeby. "A living creature

survives in proportion as it fits its environment—the physical environment in the case of vegetables and the lower animals, the physical, social, intellectual and moral environment in the case of man.”

Variation and inheritance are not separate but are in a certain sense one and the same thing. Variation is of germinal origin, is indogenous and is transmissible. Whether the offspring takes after the father or the mother in respect to particular characteristics depends on the corresponding potentialities inherent in the respective germ cells. These potentialities are best expressed by the terms “dominant,” “recessive” and blending characters.

The progeny of a pair may exhibit exclusively paternal or maternal characters, but that both are present will invariably be shown in the later generations. The progeny may therefore resemble a grandparent or ancestor. When a character is transmitted to the first generation it is said to be dominant, “but when it remains latent only to appear in some future generation it is said to be recessive. This is illustrated by Mendelian inheritance which occurs in certain plants and animals. Here the offspring are exclusively of one of the parental types, as regards one or more unit characters, that is, the dominant characters alone find expression. But if these “hybrids” are inbred, we get a reappearance of “pure dominants,” and “pure recessive” types, and a certain percentage of “impure dominants” or hybrids. Moreover if the process be continued the ratio of these three varieties of offspring will throughout approximate the formula of one pure dominant; two impure dominants; one pure recessive.

Certain variations may also be described as plus or minus variations. Albinism, for instance, is described as a minus variation due to an incompleteness in inheritance or a lack of certain hereditary qualities. On the other hand, we have augmentations or exaggerations of a character which may be termed plus variations, and are taken advantage of by breeders to produce sheep with long fleece, or “wonder horses” with extraordinary long manes and tails, etc.

Variation may be slight in amount and continuous, or it may be an astonishing step away from the parents and be discontinuous. The result of the latter was called by Darwin a "mutation," and he maintained that such mutations were never capable of reproducing their kind, but we now know of several instances of "mutations" breeding true a fact which we can to-day explain by Mendel's Law.

The progeny may exhibit "blended inheritance," a term applied when in any given character of the offspring we can detect both maternal and paternal peculiarities. It may be an intimate blend, it may be a blend with preponderance in favor of either parent, or it may be a combination, paternal in some parts, maternal in others. The child of one white and one black parent is a mulatto, and mulattoes inter-marrying breed true. Moreover, the marriage of a mulatto to a white or black again results in a blend. The same thing occurs with the brown bear and the polar bear, the horse and the ass, though in the latter by some unknown phenomenon the offspring are sterile. In rabbits of different size and color the offspring show a blend in the size characters, i.e. the size of the offspring is intermediate, but the colors follow Mendel's law. Blended inheritance cannot always be prophesied, for we have in man several striking instances where the unexpected occurred. For instance, a negro had by a white woman four sons who were white and seven daughters who were mulatto. Of course, in such cases we cannot be sure of our data. Castle reports an interesting case of the offspring of an albino by a negro, who were negroes, but whose children split into negro and albino types. This is the only striking instance on record of Mendelian phenomena in man, although we have a suspicion of it in the transmission of congenital cataract.

Finally the progeny may be a modification. Now modification, in contradistinction to variation, is of somatic origin instead of germinal origin, is the direct result of external or environmental influences, i.e. exogenous, and so far as we know at present is not transmissible. During a famine the children

are usually congenitally small and rarely reach the size of their parents, though their offspring again will be of normal stature. It is conceivable that toxic, mechanical or functional effects may have a direct effect upon the germ plasm. Hence a modification may arise from lead poisoning in the father. Some part of the spermatozoon has been effected by the poison and is deficient in its hereditary qualities. But we have no statistics showing that the grandchildren inherit this modification. This must not be confused with poisoning of a normal embryo in utero. The latter is an acquired peculiarity or character.

This brings us to the greatly disputed question of the transmission of acquired characters. We may begin by asking whether the sun's rays made the negro, or whether the pigmentation was a variation. Is it not reasonable to infer from our theory of evolution that the pigmentation was a variation which was augmented by breeding, and that its presence made the negro more fit to live in Africa? Can we conceive of structural changes in the body of a parent, induced by environment influences, which can so specifically affect the reproductive cells that they will become a part of the inheritance of the future generations? And if so what is the *modus operandi*? The first question asked is, "How can there be progressive evolution if acquired characters are not transmitted. The answer to this is that "in the supply of germinal variations, whose transmissibility is unquestioned, there is ample raw material for evolution," and that if this were responsible for evolution, evolution would have been much more rapid. An acquired character is a "modification," and "modifications" according to our definition are not transmitted. The error too often lies in the mistaking of the reappearance of a modification for transmission of a modification.

One of the arguments brought forward is that when a parent is infected with some microbic disease such as tuberculosis or syphilis the offspring is also infected. In the first place it is impossible to concede that a germ cell, either spermatozoon or ovum, could be invaded by one or more microbes and offer sufficient resistance to enable itself to live long enough to

complete fertilization. And even supposing it could do this, it would be absurd to think of the egg cell ever coming to term. The infection must take place after the organism is well advanced in its uterine life, if the child is to be borne alive. Consequently infection, whether pre-natal or post-natal, is never inherited, and when authors distinguish between "acquired" and "hereditary syphilis" they show an ignorance of the first principles of heredity.

Modification by the presence of toxins in the parent is quite another matter. We have clinical evidence to show that when a parent is poisoned by alcohol, lead or opium, structural modifications result and the children by impaired inheritance show similar structural peculiarities or malformations. This is best illustrated in the effects of lead poisoning on the offspring, as already mentioned, entirely due to the father. For biological evidence, we have the experiments cited by Thomson in which H. C. N. alcohol and nicotin were injected directly into the eggs of fowls, with the result of impaired development and malformations.

As to the transmission of immunity. Active immunity acquired by the reaction of the body to a disease, or passive immunity acquired by the injections of serum are never transmitted from the male parent to his offspring. On the other hand, both active and passive immunity may be obtained in the offspring from the maternal parent. This simply means that the agglutinins, precipitins, anti-bodies or whatever the immunity materially consists in may be filtered through the placenta into the fetal blood. But this is then a congenital immunity, and is in no sense an inherited immunity. It is well-known that some natives are immune to yellow fever. This immunity was not acquired immunity transmitted, but was the survival of those who were by variation born naturally immune, thus making a constitutional variation dominant in the race.

We have seen that infectious diseases are not inherited, and that prenatal infection or poisoning is not directly concerned with inheritance. Have we then any diseases which can be termed heritable? According to Prof. Martius, a disease is an

abnormal process injurious to the organism starting from an exogenous cause. According to this definition, then, a disease is always acquired and therefore it cannot be inherited. This by no means precludes the possibility of inheriting a predisposition to a disease. All this applies very well to infectious diseases, nervous diseases such as hysteria and epilepsy and various other processes like malignant tumors, but we find it very difficult to apply this meaning of disease to hæmophilia, for instance. Thomson maintains that this condition is not inherited, but that a peculiarity of the vascular system is inherited, or, to put it negatively, that some part of the normal inheritance is absent. Yet in the same book he cites the transmission of albinism, which is both a latent defect and a variation. Albinism is not necessarily a disease. Hæmophilia, on the other hand, is a disease, and is both a latent defect and a variation; moreover we have no evidence that it is a process started by some exogenous cause. In fact Martius himself cites hæmophilia as "an indisputable example of a true hereditary disease." Working on the definition generally accepted that "a disease is a departure from the average normal which brings about discomfort to the individual," we may conclude that any latent defect, variation or mutation which brings about discomfort to the individual is a disease. As an example of a mutation we have Erb's progressive muscular dystrophy which, of course, is never transmitted. As examples of diseases which are variations and as such inherited we have hæmophilia, myotonia, colour blindness and the hereditary type of achylia gastrica. Hæmophilia and colour blindness occur almost entirely in males, and are transmitted through the daughters to the grandsons. The sons therefore are not afflicted and their posterity remain exempt so far as they are concerned.

We now come to a class of diseases where it is difficult to say whether they are truly inherited diseases or result from exogenous stimuli acting on inherited predispositions. These include otosclerosis, cataract, refractive errors—especially myopia—"transitory albuminuria," cancer, diabetes, obesity, gout, and

certain nervous diseases such as "mental weakness," epilepsy and hysteria. It is certain that the predispositions to these diseases at least remain more or less dominant, as is shown by the family histories in clinical data. Eighty per cent. of all cases of hysteria give a positive family history in this respect. In diabetes mellitus we get a positive family history in 20 per cent., in epilepsy 35 per cent. and in England we find a positive family history in 90 per cent. of cases of gout. This last does not mean much when we consider how often the English physician makes a diagnosis of "irregular gout."

One of the arguments which is brought forth by certain scientists in favor of Lamarck's hypothesis of the transmission of acquired characters is found in the experiments of Brown-Sequard. This ingenious yet impetuous physiologist made a partial section of the spinal cord in the dorsal region or cut the sciatic nerve in thousands of guinea pigs. He observed that "the injury was followed after some weeks by a peculiar morbid state of the nervous system, corresponding in some of its features to epilepsy in man; he allowed these morbid animals to breed, and found that the offsprings were frequently decrepit, and that a certain number had a tendency to the so-called epilepsy." An analysis of these experiments shows that the destruction of part of the nervous system was never reproduced in the offspring, but the results apparently were. The morbid conditions in the offspring were very diverse, and were often neuroses which Prof. Ziegler has shown are frequently exhibited in guinea pigs kept in captivity. Moreover the "epileptic" fits occurred in the immediate offspring only. The explanation therefore lies either in the effects of the operation on the embryos in utero, in other words these were congenital and not hereditary defects, or that the offspring actually inherited neuroses which were true variations transmitted not only from their immediate parents but from their ancestors and which were displayed by the offspring in mimicking the fits of the parents. In any case the fact that the third generation exhibited no "epilepsy," and that the results of similar experiments by Sommer do not corroborate these, we can not

longer claim that the experiments of Brown-Sequard serve to support the doctrine of the inheritance of acquired characters.

Alcoholism is due to an inherited "mental weakness" which may have found some other expression in the parent or parents, or it may be due to a deficiency of self control acquired by the immoderate use of the drug. The atrocious prescribing of alcohol in continued doses to infants and children by certain physicians, or its administration in the form of patent medicine, is one of the chief ways by which a craving for this drug, or habit, is acquired. Many pediatricians who are achieving fame for decreasing the infant mortality by modified milk are furnishing a large percentage of the future occupants of our sanatoria, almshouses and prisons by their indiscriminate, short-sighted and utterly unscientific prescribing of alcohol as a tonic.

The term *telegony* is applied to rare cases where an offspring resembles a sire which though not its father, had previously paired with its mother. A dog breeder will tell you that if a thoroughbred bitch has pups by a mongrel she will not afterwards breed true. Spencer cites the case of a white woman who had intercourse with a negro and later with a white man. The children by the second male showed negro characteristics. The examples of this phenomenon are by no means constant in animals, and so far as man is concerned it is practically unheard of. In the case cited by Spencer we can hardly rely on the veracity of such a woman, as there were probably several candidates for fatherhood of the child, and the real father probably had negro blood. Accordingly the verdict in regard to the occurrence of *telegony* remains "nonproven," and if it does exist we certainly can offer no satisfactory explanation.

A word as to maternal impressions. J. W. Ballantyne has carefully studied the abundant literature on the subject from the time of Jacob down to the present, and the gist of his conclusions is that they are merely coincidences. It is admitted that shock and distress may have prejudicial effects on the unborn offspring. Examples of this were especially abundant during the siege of Paris and during the Irish famine, but to associate

a particular structural defect with a particular mental impression seems far fetched. Here again a *modus operandi* is difficult to conceive of. This superstition is held chiefly by those who have implicit faith in the Bible, to whom an explanation is superfluous.

The determination of sex is still a much disputed subject. So far as man is concerned statistics show: first, that the proportion of male to female births in Europe is 1060 male to 1000 female; secondly, that "the first born child of any mother is more likely to be a male in the proportion of 8—7;" thirdly, that there is a preponderance of male births in the Semitic race, and of females in the Negro race. The ovum probably determines the sex of the child. This is borne out by the fact that twins formed by two spermatozoa and one ovum are always of the same sex, and twins formed by two ova and two spermatozoa may be of different sexes, and the proportion of males to females in such twins is the same as the average in all births. In other words the functions of the father are asexual, at least in the determination of the sex of the immediate offspring. Sex is probably hereditary, i.e., the sex of any fertilized ovum "is determined by the compromise effected between the ancestral contributions that constitute inheritance." The hypothesis that sex is hereditary explains to some extent the constant proportions of the birth rate between the two sexes, and it rules out any theories regarding the preponderating influence of the elder or more vigorous parent.

Among certain peoples the marriage of near kin is prohibited by religious or civil laws. That such inter-marriage is a cause of degeneracy is a relatively modern idea, probably based on the results in certain noble families. On the other hand, there is ample evidence as shown by George Darwin that consanguineous marriages are not in themselves causes of degeneration or of diminished fertility. Saleeby sums up the answer to, "Should cousins marry?" by saying that it depends on the cousins. The good qualities of good stock, the bad qualities of bad stock, are naturally accentuated by such unions."

The development of a man's character depends to a great extent upon nourishment, education and surrounding influences, but how the individual reacts to these must largely depend on his inheritance." This is indeed a fatalistic view, but it is the view point arrived at from scientific investigation, a view point sharply contrasted to the arbitrary conclusions so commonly arrived at by the laity and theologians, who rather indolently regard civilized man as "God's domestic animal."

Man can to a certain extent create his environment. He is characterized by his intelligence which has from the first enabled him to survive and flourish in the struggle for existence. And it is the most intelligent who are victorious, provided they have sufficient physical vitality to live. It is the old story of David and Goliath. It is by selection and improved environment that the race of man develops. Man has by no means reached his highest stage of development, and the great problem of eugenics is how to continue or hasten his development.

Darwin in his *Descent of Man* (1871. P't. 1 Chap. V) writes: "We civilized men.....do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed and the sick; we institute poor laws; and our medical men exert their utmost skill to save the life of every one to the last moment.....Thus the weak members of civilized societies propagate their kind. This danger described by Darwin is now being discussed in prolific language by many writers. On the one side is the blind and indiscriminate humanitarian who with a fanatic zeal attempts to alleviate all suffering and to save the unfit especially from death only to allow them to propagate their kind. Nietzsche, on the other hand, disregards the natural sympathy of one man for another, and suggests only that we follow the law of the survival of the fittest. He declares that the high infant mortality is a blessing, and that our charitable institutions are a menace to mankind. In short, he would have us obey nature implicitly. To do this would be losing the one characteristic which raises man above beasts, for as Lankester has ably put it, "man is Nature's insurgent Son." Between

Nietzsche and the improvident humanitarian lies the solution of the problem. We must decrease infant mortality and relieve suffering as prompted by our natural instincts, but we must not lose sight of the infallible laws of heredity.

Eugenics, which deals with race improvement through heredity, prompts us to eliminate the worst elements of society by preventing their reproduction; while euthenics which deals with race improvement through environment prompts us to offer the proper environmental stimuli which call forth the best of our native endowments and often develop unsuspected capacities owing to the complexity of our individual inheritance.—*The New England Medical Gazette*, February, 1914.

EDITOR'S NOTES.

The Vaccination Question in the Light of Modern Experience.

Dr. C. Killick Millard, on February 4th, concluded a course of three lectures on the vaccination question in the light of modern experience by the Chadwick Trustees.

In his first lecture Dr. Millard said that when he first went to Leicester his views on the subject were strictly orthodox, but in consequence of his experience of small-pox in Leicester, he had been obliged to modify those views considerably. He attributed the bitterness felt by the opponents of vaccination to the compulsory clauses of the Vaccination Acts. There was also the repulsion which many persons felt to the introduction of a disease into a healthy child for the sake of preventing another disease, the risk of contracting which was problematical. He set out the following propositions as those to which he had been brought by his own observations :

1. I believe absolutely in vaccination, though with certain important reservations, and I differ *in toto* from the anti-vaccinist when he asserts that vaccination is a "myth" and a "delusion." I agree entirely with the pro-vaccinist that recent vaccination confers on the individual protection against small-pox, which, for practical purposes, is complete, though unfortunately only temporary.

2. Vaccination, repeated as often as necessary, is invaluable for protecting those who for any reason are specially exposed to the infection of small-pox—for example, doctors and nurses.

3. It is also of very great value for protecting persons after actual exposure to infection—that is small-pox "contacts."

4. I agree entirely with the provaccinist that vaccination has a remarkable power of modifying and mitigating small-pox for many years after its power to protect against attack has worn out. Moreover, the protection conferred by vaccination can be renewed by revaccination.

5. On the other hand, I agree with the antivaccinist in doubting the value to the community at the present day of infantile vaccination as provided by law. I think that an altogether exaggerated view has been taken as to the effect of such vaccination in preventing the spread of small-pox, which is the real problem before us.

6. I agree with the antivaccinist that sanitation, notification, isolation, surveillance of contacts, and other modern measures, which are becoming generally adopted, have played a more important part in the abolition of small-pox from this country during the past thirty years than infantile vaccination.

7. I think the antivaccinist is right when he contends that the drawbacks to infantile vaccination and the injuries to health caused by it are not sufficiently recognized by the medical profession, who, in their sincere anxiety to defend vaccination, have been inclined to minimize these drawbacks.

8. On the other hand, I quite admit that the antivaccinist, in his hostility to vaccination, has frequently run into the opposite extreme and grossly exaggerated these drawbacks, whilst endeavoring to prejudice the question of vaccination by making wild assertions about the nature and origin of vaccine lymph, etc.

9. There is distinct evidence that small-pox is leaving this country in spite of the increasing neglect of vaccination, and it seems probable that such neglect of vaccination will continue to increase until the great majority of the population has become unvaccinated. I am inclined to believe that when this happens the problem of small-pox prevention will very possibly be simplified and made more easy rather than more difficult.

10. The great difficulty in controlling the spread of small-pox at the present day is the occurrence of very mild unrecognized cases of the disease which spread infection broadcast before any precautions can be taken. It is an important fact, the significance of which does not appear to be sufficiently appreciated, that these mild unrecognized cases which do so much mischief, and which go so far to thwart our efforts to control the

spread of the disease, occur almost entirely amongst vaccinated persons and *because they were so vaccinated*. In other words, it would seem that infantile vaccination, by its very success in mitigating small-pox after its power to protect from attack has worn out, may have a distinct tendency to encourage the spread of the disease. It is possible that this tendency more than neutralizes any benefit which the community derives from the fact that vaccination largely protects the child population from small-pox.—*The Homœopathic Recorder*, March, 1914.

Modern Medical Terminology.

Sir : I have been meeting lately several general practitioners and antiquated fossils like myself who are breathlessly panting in the rear of modern medical progress, and trying to keep abreast of its recent developments, and from all sides I hear the same complaints.

First, of the complexity and obscurity of style and want of the "clarity" which one of your correspondents so earnestly recommended in your columns some time ago; and, secondly, of the harsh and jaw-breaking words, mostly from Greek roots, extracted with difficulty, tough to chew, and impossible to digest.

May I remind your readers of a few culled from recent numbers of the *Journal*? "Trypanosomiasis" has, I believe, something to do with tropical diseases; and fortunately we are told that "triphenylmethane" is a dye, but no clue is given to the identity of "haptophoric." "Salvarsan" modestly cloaks itself in the mantle of "dioxydiaminorarsenobenzol," alongside, I suppose, of the "orthoamidophenol" group.

Pursuing our investigations a little further, we find "parasitotropism" and "organotropism," whilst a new derivative of quinine is introduced to us under the name of "ethylhydrocupinum," which is basely outdone by the methylhydrocuprein combined with pneumococcal serum. We are relieved to find that blastomycosis can be treated by salvarsan, but the victims of

piroplasmosis must be in a bad way if they have to fall back on the two coloring matter—trypanllavin and trypanosid. We hear of the semi-auricular spindle derived from the original semi-auricular ring, which has apparently something to do with the bundle system of the heart. It may possibly be satisfactory to some victims of cardiac trouble to be told that Küllbs divided the bundle system into three distinct portions—namely, the Aschoff-Tawara node, the bundle of His proper, and the fine ramifications of the bundle to the apex of the ventricle, but even “orthoper-cussion” would fail to let me find the true inwardness of these weird terms.

If it is necessary to use a nomenclature which conveys no meaning to the ordinary professional mind then we must bow to the inevitable, and we old-fashioned folk must return with a sigh of relief to the clear and classic pages of Watson and Clifford Allbut and Paget and Latham and Chambers. I am, etc.—*R. Farquharson*, P.C., M.D., Finzean. Aboyne, Sept. 26th.—*The Homœopathic Recorder*, February, 1914.

The Test of High Potencies.

Our readers will, no doubt, remember that the British Homœopathic Association offered a prize to the first doctor who, out of six powders, identical in appearance, whereof only one was medicated, would identify the medicated one (a high potency) by the results of clinical administration. We are glad to announce that the prize has been won by Dr. Charles Spencer, who identified *Sepia* 200 in this way. It will be observed that the chances were heavily against an accidental success, but we hope that these experiments will be widely made, by several physicians, for a series of successful identifications would go far to prove that high potencies are not the inert agents which they are sometimes assumed to be.—*The Homœopathic world*, February 1914.

A Curious Treatment of Diabetes.

Diabetes is a serious disease which, however, permits sometimes those who are attacked by it to become centenarians. It is a disease that was known to the ancients, but its therapeutics are still uncertain.

Dr. Dinguizli while making researches in the ancient Arabian medical texts, has discovered that sugared diabetes was known to Avicene, the famous Arabian doctor who lived in the tenth century. Being asked to make a report on Dr. Dinguizli's work, Professor Albert Robin has remarked that the treatment without dieting instituted by Avicene in those far off times, is very curious and most efficacious. The treatment is also most simple. It consists in absorbing several times a day, grains of a plant called semen-contra, some lupine grains, and some seeds of Greek fennel. Dr. Dinguizli has applied this treatment to thirty-nine diabetic patients by making them take daily from thirty to forty grammes of this mixture of grains in wafer cachets containing half a gramme of semen-contra, one gramme of fennel and one gramme of lupine. Many patients have been cured without following any regimen. Professor Robin has also tried this treatment on five diabetic patents, two of whom were rapidly cured.—*The Homœopathic World*, February, 1914.

The Fear of Small-Pox.

Is not the fear of small-pox exaggerated? Take the last book, issued by the U. S. Census Bureau, *Mortality Statistics*, and you will find that, during the period covered by 1906-10, the average mortality from small-pox per 100,000 population, was 108. During the same period, that from measles was 5,092; from scarlet fever, 5,030, and that from whooping cough, 5,440 per 100,000 population.

During the year 1911 there were 130 deaths from pox; average per 100,000 was 0.2. Measles gave 5,922 deaths,

average 10.0. Scarlet fever gave 5,243 deaths, average 8.8. Whooping cough, 6,682 deaths, average, 11.3. Cancer had 44,024 deaths, an average of 74.3. and tuberculosis, 81,796, an average of 138.0.—The *Homœopathic Recorder*, March 15, 1914.

The Synthesis of Foodstuffs.

It is noteworthy that while we hear on all sides of the triumphs of synthesis in the manufacture of certain industrial products no practical success has so far been obtained in producing foodstuffs by synthetic means; and yet the elementary foodstuffs are less complex in composition than, say, rubber, indigo, or the numerous aniline derivatives, and a splitting up of food substances into simpler compounds is easy. Starch, for example, the leading representative of the carbohydrates, is readily converted into oxalic acid by oxidation methods, as by treatment with nitric acid, while sugar readily yields carbon and water when warmed with strong sulphuric acid. But the reverse processes are not known; starch has not been artificially built up from oxalic acid or sugar from carbon and water. Certain attempts have been made to elaborate foodstuffs out of the simple materials carbon, water, and nitrogen, but with results of no practical significance. No laboratory has yet been able to reproduce the synthetic methods of the plant or animal. With all his wonderful constructive successes the chemist has not yet made bread or any constituent of it on a commercial scale from the elements which compose it. Starches, proteins, and fats in significant quantities are so far exclusively the products of plant and animal activities. Now and again it has been announced that a step forward towards synthetic foodstuffs has been made by employing chemical or electrical agencies, but such experiments have led to no practical development. Later it has been stated that the synthesis of certain organic compounds can be effected by photo energy. It is confidently asserted that the sugars can be built up from

carbonic acid gas, and water by exposing these simple compounds to the action of ultra-violet light. We have already referred to the interesting observation that the ultra-violet rays are capable of starting chemical changes analogous to those produced by ferments or enzymes. In this case it is clear that biological action has been dispensed with, so we need not be without hope that the so-called vital agencies may prove after all not to be essential to the production of foodstuffs. It is further remarkable that the ultra-violet rays are capable of decomposing carbonic acid, inasmuch as chlorophyll, under the influence of the sun's rays, effects the same process in the plant. When we come to understand in more definite terms the chemistry of the cell the chances of producing foodstuffs by synthesis will unquestionably improved.—The *Lancet*, March 7, 1914.

CLINICAL RECORD.**CHRONIC ECZEMA CURED BY ISOTONIC
SEA-WATER INJECTIONS.****BY ARTHUR G. SANDBERG, M. D.**

Mrs. S. C., aged 49, a lady of independent means consulted me on August 20th, 1913, for Chronic Eczema of over twelve years standing.

The patient had always enjoyed good health until the attack commenced, when she was treated by her own doctor (allopathic) with the usual routine of old school drugs and ointments, with little or no benefit. This lady was a public singer, and as the face was chiefly affected, she was unable to follow her profession, which preyed greatly upon her mind, and after about two years she developed symptoms of insanity which gradually increased and at last resulted in her being certified insane and placed in an institution.

After eight years in the Asylum, the patient was discharged cured from her dementia, but the eczema, which had remained during the years that she was under restraint, was unrelieved. Twelve months after she had regained her mental balance she consulted me for her skin trouble.

The patient was a tall, slight woman, very intelligent, and showing no signs of her late mental condition.

The face was completely covered with eczema rubrum, the whole surface vividly red and swollen, and hot and tense to the touch. There was a good deal of eczema on the neck, more particularly at the back, and also on the hands, arms and legs.

The family history was good, with the exception of a decided gouty taint.

There was very great heat and burning, especially when warm through exercise and in bed. The monthly period was regular, but the irritation of the skin was worse at that time. The bowels were opened each day, and the urine was normal. The patient had been troubled with acue as a girl.

Treatment: Rhus. Ven. 30 was given every night for three days, and the lady was told to return in a week. On the 27th of August there was no change, so three more doses of *Rhus V.* were ordered, to be taken as before.

Aug. 30th.—No improvement, irritation as much as ever. 20 cc. Isotonic Sea-water was injected, and the patient was told to return on Sept. 2nd or 3rd.

Sept. 2nd.—Very much improved, the irritation is less, and the face paler and less inflamed. Repeat.

Sept. 5th.—Not quite so well, 50 cc. injected.

Sept. 9th.—Better, repeat 50 cc.

Sept. 13th.—Improving, but irritation worse in bed. Repeat 50 cc., also *Rhus V.* 200 every night.

Sept. 16th.—About the same. Repeat 50 cc., also the *Rhus V.*

Sept. 19th.—About the same. Repeat Isotonic Sea-water 100 cc.

Sept. 23rd.—Improving. Repeat 100 cc., and one dose of *Radium Brom.* 14, to be taken at night.

Sept. 26th.—Repeat.

Oct. 3rd.—The irritation is very troublesome, though the eczema is decidedly improved. 150 cc. No medicine.

Oct. 7th.—Repeat 150 cc.

Oct. 10th.—200 cc., and to be repeated on *Oct. 14th, 17th* and *21st*, on *Oct. 28th* the dose was reduced to 100 cc., and on *Nov. 4th* and *11th*, 150 cc. was given. *Nov. 19th*, the eczema is much improved, especially on the face and back of neck, but as there was still great irritation at night, a dose of 250 cc. was injected. This was continued each week, until *Dec. 31st*, when the condition was improved in every way. The irritation had entirely ceased, and the arms, neck and face were perfectly clear.

The patient was advised to have an injection of 200 cc. fortnight for three months, and then to cease all treatment. She is very well now, sleeps all night, has a good appetite, has taken up singing again, and her mental faculties seem perfectly normal.—*The Homœopathic World*, February 2, 1914.

Gleanings from Contemporary Literature.

WHY THE UTERUS SHOULD NOT BE CURETTED. A SUBSTITUTE FOR CURETTAGE, WITH A REPORT OF 208 CASES.

BY THURSTON WELTON, M. D.

Récamier devised the uterine curet. He first mentioned it in the medical literature in 1846. (*Annals de Therapeutique*, Vol. IV. p. 182).

For several years, in fact until about 1880, many workers, the majority, were vehemently opposed to the curet and uterine curettage. Their main objection was that, in a large percentage of the cases, infection followed in the wake of its employment.

With the birth of aseptic and antiseptic surgery the uterine curet came into its own and up to the present has had a popular reign. Here and there, however, certain gynecologists have curtailed their use of the curet, but the greater number of physicians still perform uterine curettage as did their fathers of a generation ago.

Eliminating the uterine curet as a means to a laboratory diagnosis and confining the question to one of therapeutics we have for consideration whether or not uterine curettage is justifiable.

To discuss in detail the various disorders peculiar to the female and the countless theories presented for our consideration by the many workers in gynecology as related to uterine curettage would be to write a volume. Therefore, I am limited to a mere outline of the subject.

As a preliminary we will consider uterine bleeding. We may classify bleeding from the uterus under three general heads.

1. That type of case where menstruation is normal except that the flow is profuse or scanty. The uterus and appendages are normal and a pathological systemic condition is present. Among the systemic conditions we have as examples hemophilia, leukemia, typhoid fever, malaria, syphilis, lead or phosphorus poisoning, organic heart disease and cirrhosis of the liver.

Curettage will not improve, nor is it indicated in this type of case. Many practitioners, however, resort to the curet in a deluded hope that good results will be their reward.

1a. That type of case where the scanty or profuse menstruation is caused by a pathological condition of the uterus or the uterine appendages. The trouble may be caused by malpositions of the uterus; or a pathological state of the adnexa may be caused by an ascending infection from the uterus, the endometrium being primarily attacked; or the infection may be a descending one and the changes in the uterine lining are secondary. To illustrate: An ascending gonorrhea in the first and a descending tubercular infection in the second type of case.

As we shall see, an endometritis accompanies these conditions and for this reason the curet is employed. We shall learn why the curet cannot do the work properly and why, at best, it is but a preliminary step to a procedure aiming at the source or end-result of the trouble.

2. That type of case where menstruation is regular or irregular but bleeding occurs between the periods. These cases invariably point to the uterus itself. To illustrate: fibroids, polypi, carcinoma, etc. In this type of case many men, failing to make a careful and thorough examination curet the uterus. The procedure not only does no good but is fraught with great danger.

3. The type of case where systemic diseases are excluded, where the woman has been regular or fairly regular in her menstruation and reports that she has gone over one or more periods and then suddenly began to bleed. This type of case is associated with some form of pregnancy. As examples we may mention the various types of abortion, miscarriage, ectopic gestation, etc. It is in this class that the curet is most often used.

Therefore, in Type 1 the curet has no use. In Type 1a, the curet is used and, at best, is but a preliminary step to a more complete operation. In Type, 2, the curet should play no part. In Type 3, the curet has its greatest abuse. We shall soon learn why this is true.

The general practitioner cures for what he calls an endometritis. Pathologically the classification of the different forms of endometritis

is still a debatable question. From a clinical standpoint we will divide the subject into acute and chronic endometritis.

In acute endometritis we may classify the chief causes as follows:

1. Infection following labor and abortion.
2. Faulty technique in office examinations of the vagina and interior of the uterus.
3. The results of operations lacking strict surgical asepsis.
4. Sloughing of intra-uterine growths.

It is elementary to say that a contra-indication to curettage is a septic condition of the genital tract. Therefore, the curet is used in these cases following labor and abortion in the absence of sepsis. Otherwise, according to our above tabulation of causes, the curet should not be used. We shall see why it has no place in even the first mentioned cause, after labor or abortion.

In chronic non-gonorrheal endometritis we have those cases which, from the acute type, terminate into the chronic forms, and those varieties in which no acute stage is demonstrable by clinical methods. Those that result from the acute type, as a rule, are from puerperal or post-abortal origin. Here again the curet is commonly used. The varieties that are not preceded by an acute stage are found in cases where we have present polypoid, tubercular conditions and results of infectious diseases such as scarlet fever, typhoid, etc.

As can be seen the curet will do no good in this form of chronic endometritis.

Considering the etiology of chronic endometritis we have as causes: uterine displacements and malformations, subinvolution of the uterus, lacerations of the cervix, pelvic tumors, sexual excesses and chronic constipation.

The curet is employed as a relief of this condition when arising from some of these causes. When relief is recorded it is due to the accompanying treatment or operation and not to the curettage.

Therefore, the misleading term, endometritis, is often an excuse for curettage. In the pre-menstrual stage of menstruation, as demonstrated by Hitschman and Adler (1908), there is a thickening of the mucous membrane and increased glandular activity. These changes occur about seven days before the menstrual flow. In the

post-menstrual stage, the mucous membrane is thin and pale, secretions are absent, and, the stroma consists principally of spindle cells.

Thus it is easily seen how often a diagnosis is made of a hypertrophic endometritis from the scrapings of a normal endometrium during the pre-menstrual stage in the menstrual cycle and of an interstitial endometritis from the scrapings of a normal endometrium of the post-menstrual period. Yet in ninety per cent. of these cases the curet is employed and providing it causes no harm, the curettment of a normal endometrium is later recorded as a cure.

In the light of these facts a pathological report in these cases loses its real value and the only definite way to be positive of the diagnosis is to perform a hysterotomy.

Among other common conditions in which the use of the curet has been its abuse are amenorrhea, secondary amenorrhea, menorrhagia, metrorrhagia, sterility, primary and secondary, leucorrhea and dysmenorrhea.

Primary amenorrhea is either due to a lack of growth of the uterine organs or to atresia of the hymen or vagina. Surely the curet has no place in these conditions, and yet how often it is used!

Secondary amenorrhea may be due to several causes such as menopause, atrophy of the ovaries, such constitutional diseases as leukemia, tuberculosis of the kidney, chronic nephritis, morphine habit, etc., or the amenorrhea may be due to grief, worry, fear, grave hysteria or melancholia, or from an acquired atresia of the genital canal.

To our mind we can dispense with the curet in any of these conditions and institute other treatment.

The subject of menorrhagia and metrorrhagia is too general to treat of in detail in this discussion. Among the local causes, according to Burrage, we have: uterine congestion, polypi, endometritis, abortion, extra-uterine pregnancy, subinvolution of the uterus, submucous fibroids, carcinoma of the cervix or fundus, sarcoma, inversion of the uterus, backward displacements, inflammation of the tubes and ovaries, artero-sclerosis of the uterine vessels, small

cystic degeneration of the ovaries, and ovarian cyst with twisted pedicle.

In many of these cases the curet would do absolutely no good and in the remainder the operation directed to the primary cause is of the only and real value.

Dysmenorrhea may conveniently be classified into, 1. Those associated with lesions of the uterine organs that can be diagnosed; 2. Those in which it is present but no abnormality of the organs can be determined. These cases are not frequent.

Congenital malformations of the uterine organs, retroposition with antelexion, pelvic inflammation and fibroids are the most common causes of dysmenorrhea. Uterine curettage is not indicated in any of these conditions.

Sterility is a condition in which the curet is very often employed by many physicians. In all cases of sterility the male first should receive attention. Kelly, quoting Sanger, and Lier and Ascher, reports that in 242 husbands of sterile marriages, 104, or 43 per cent., showed absence of living spermatozoa. Fifty-five of these had infected their wives, producing, as the authors assume, indirect sterility.

Primary sterility may be due to, 1. Impossibility of conception due to anomalies and diseases of the uterine organs; 2. Conditions of the uterine organs which cause pregnancy to be interrupted by causing the death of the fertilized ovum or fetus; 3. Constitutional diseases, or general causes preventing conception or causing a cessation of conception after it has begun.

Secondary sterility is usually due to a gonorrheal infection.

Yet in all cases it has been customary by the majority to dilate the cervix and curet the body of the uterus. We admit pregnancy has occurred after this procedure, but in the cases where pregnancy results it is due to the dilatation and sexual rest and not to the curettage. Nevertheless we have overlooked several salient facts. What is the percentage of pregnancies following curettage in women who were previously sterile and how many women previously sterile conceive and either abort or miscarry; or how many women who had a chance before the curettage to conceive.

have been rendered permanently sterile? Work and figures along these lines would be interesting were it possible to collect them.

In cases of so-called "leucorrhea," where slides of the discharge have not been examined microscopically, or having been examined are reported negative, gonococci are often present. The curet acts as a carrier, in these cases, and the gonococci are carried past the internal os to the cavity of the uterus. It is interesting to note that in a large majority of ectopic cases a history is given of a curettage or curettages having been performed.

Prior to plastic operations on the cervix and perineum it is still a routine habit to curet the uterus as a rule so little considered that the house-surgeon is designated to perform this part of the work.

It is elementary knowledge that the uterus should not be cured in the face of acute infection such as post-partum sepsis, acute salpingitis, etc.

In these cases where the curet is apparently indicated such as in retained secundi after labor or abortion in the absence of sepsis, endometritis (certain forms), as a stimulant to the uterus in atonic conditions, etc., you naturally ask, what are the objections to the curet?

In the hands of an inexperienced operator uterine curettage is not only a difficult but a dangerous procedure.

Perforation of a uterus is a common habit. At an autopsy I saw a uterus that had been cured by a man evidently not accustomed to performing curettage. He had cured a hole two by two and a half inches through the anterior wall of the uterus and a hole three by one and a half inches through the posterior wall of the uterus, reaching to the broad ligaments. The woman died of hemorrhage and shock. In clean cases mere perforation of the uterus in the majority of cases gives no post-operative complications. If infectious bacteria are present the most serious complications may arise ending even in death. Perforation of the uterus with a loop of intestine drawn down by the curet has occurred. We had a service case sent to the hospital that had been cured and a loop of intestine drawn down through the external os. After

pulling two feet of intestine out of the cervix the operators tried to push it back into the cavity of the uterus. The patient died.

Our main objection to curettage is that it is impossible to thoroughly curet a uterus. By thoroughly I mean: 1. To curet the uterus entirely; 2. To curet an even depth the entire lining of the cavity; 3. To curet and not penetrate the muscle itself.

We have tried to thoroughly curet a uterus, prior to a hysterectomy. As a surgical operation it has proved a dismal failure. Upon opening the uterus after removing it we found parts that the curet had not touched and areas where the curet had made deep furrows. Not only the writer but men of vast experience have reported many similar cases. It is true that a certain touch can be developed but it takes years of experience with hundreds of uteri and even then it is a sort of popular myth.

If in the hands of experienced workers such a condition is possible, what damage must be wrought by those who lack surgical training and curet a uterus at rare intervals of time?

Those experienced with the curet will claim that the dull curet will not make deep furrows in the muscle. We will admit this in part. But the fact remains that even with the dull curet a uterus cannot be thoroughly curetted.

One writer says, that even though the uterus cannot be thoroughly curetted new epithelium will grow from the basement membrane and from the "islands of epithelium" that are left. Therefore, if our work, at best, can only be partly done, is it not time to think of another procedure that will do it thoroughly all the time?

According to Burrage the removal of the entire endometrium and submucous layer will prevent regeneration and cause the formation of scar tissue and subsequent sterility.

The occurrence of hemorrhage following curettage is not the rarest happening after labor or abortion when the uterine sinuses are large.

A case after curettage may give no immediate serious results. It is the end-result or results that we must consider. These engage our attention weeks, months, years, after the curettage. In case of a malignancy the curet will act the same as a match to oil and spread the condition in a manner that will amaze the physician in

charge. Recently the opposite theory has been advanced but has not become a settled question.

It is folly to curet a uterus where there is an excessively congested endometrium resulting from large and over active ovaries. It has been done, no doubt, in thousands of these cases and the physicians have wondered why the condition so quickly recurred.

In cases of fibroid of the uterus the curet is called into play to control bleeding temporarily in those cases where the bleeding is due to a hyperplasia of the endometrium. To quote Crossen, "In many cases, however, the cavity is so distorted that the curet can only wound parts of the wall here and there without removing the entire endometrium. In addition to this uncertainty of controlling the hemorrhage there is danger of infection of the uterine wall or infection and necrosis of the growth, leading to an exceedingly dangerous condition."

Bland Sutton ("Tumors Innocent and Malignant," 4th Edition, 1906, p. 187) writing of latent seedling fibroids says, "If a number of uteri be examined from women between the twenty-fifth and fiftieth years by the simple means of sectioning them with a knife, in a large proportion of these uteri a number of small rounded fibroids, resembling knots in wood will appear, their whiteness being in strong contrast with the redness of the surrounding muscle tissues. These discrete bodies, in many instances no larger than mustard seeds, are in histological structure indetical with fully grown tumors."

With these thoughts before us we must admit that curettage in cases of well developed fibroids is liable to do great harm. Also in cases where one would not be led to suspect a fibroid condition there are often present these seedling fibroids, histologically identical with fully grown fibroids. In these cases a sharp curet scraping furrows in the muscle of the uterus is more than likely to traumatise these seedling fibroids and give rise to infection, necrosis, or act as a traumatic agent which will cause that which was lying dormant to take on sudden and new life.

Until recently many men and at the present time no small number curet the uterus in cases of post-partum sepsis. In any case of puerperal septicemia the curet is contra-indicated. This

subject is of vital importance and the various forms of puerperal septicemia should be known. The inflammation may remain localized or be of the type of infection where the infecting micro-organism gets into the lymphatics to the cellular tissue of the pelvis or by the blood stream.

The spread of the poison may be rapid and in the large majority of cases fatal. Non-interference of the uterus is the law. A curet in such a case is criminal. The most common abuse of the curet in these cases is when a sapremia is present from retained material in the uterus. Feeling something must be done the family physician reaches for his curet and in many cases that which would have resulted in an uneventful recovery terminates in a prolonged sickness and often death. In all cases of post-partum or post-abortion infection the type of infection must be determined and in every type but one, the uterus should be left alone. We shall consider the exception in the case reports.

In those cases where curettage has been done and a good result is reported the case improves either in spite of the curettage or because an operation directed at the underlying lesion has also been performed.

In a large number of women who have entered the hospital for treatment we have left the interior of the uterus alone where formerly we would have curetted. In those cases where the curet, according to our present teachings, is indicated we have employed a substitute in its place. We do not claim originality except in the proportion of the ingredients used. Chemicals have been used in the interior of the uterus for years but objections have been raised to all of them. To date the 50 per cent. of the official tincture of iodine has proved ideal. Dr. Wade reported this method in a paper two years ago ("A common Abuse in the Practice of Gynecology." *International Journal of Surgery*, May, 1912). We have not found a better substitute. If, however, we hear of anything that we think an improvement on the 50 per cent. tincture of iodine we will give it a fair trial because we know advancement will be made along these lines.

Our method of using this substitute is as follows. The patient prepared, the cervix is held by a guy rope. The cervix is dilated. In all cases, except the cervix is widely dilated, we first use a dressing forceps, then a small dilator and lastly a large dilator.

We "iron" the cervix in dilating. That is as we dilate we rotate the dilator slowly and try to equalize the pressure on all parts. By "ironing" the cervix and using different sized dilators little or no injury is done to the cervical canal. After the uterus is dilated strips of gauze, from 6 to 8 inches long, are soaked in the 50 per cent. tincture of iodine. A strip of the iodinated gauze is introduced into the uterus with the aid of a uterine sound. This is left about a minute, removed, and another strip of the iodinated gauze introduced. As a rule from five to eight strips of gauze are used. When a drain is required the last strip used is left in the uterus. This is removed, as a rule, in about eight hours.

In post-partum and post-abortion cases where material is in the uterus when we know a septic condition is present even in the face of temperature, we use the iodinated gauze as described above with the exception that we introduce and retain from two to five strips of gauze at once. Then securing the ends with a clamp the gauze is twisted and gradually withdrawn. This process is repeated from two to four times. (First the material in the uterus is removed as completely as possible with ring clamps. This is done without traumatising the cavity of the uterus.)

As a final step one strip of the iodinated gauze is left in the uterus as a drain. In all cases where this method was used we had a movable uterus.

The 50 per cent. tincture of iodine has several advantages. It is readily absorbed into the tissues, whereas the official tincture is not. In cases of endometritis it does the work which the curet was originally supposed to do. In atonic conditions and sub-involution before the process is finished the uterus contracts. It is an antiseptic and if infectious micro-organisms are present either in the uterus or the vaginal tract the iodine renders them harmless. It does not necrose the tissue and does not get into the tubes as some authors have claimed. In three cases we did not use the gauze but injected the iodine with a syringe. Later opening the abdomen we failed to see any evidence of iodine in the tubes. We have had cases following labor and abortions with retained material and a temperature of 104. The method described was carried out and within eight hours the temperature fell to normal or one degree above normal.

In small uteri and cases of sterility where the husband was not at fault and the trouble seemed to be with an undersized uterus,

a tight cervix or an acute antelexion, etc., the cervix was thoroughly dilated, iodinated and a glass stem pessary sewed in the cervix after the method of Baldwin. The curet was not used. In misplaced uteri the endometrium was iodinated and the misplacement corrected.

In no case have we regretted using the iodine, while previous to using it we have left that we did do harm with a curet.

Since July, 1911, to October, 1913, Dr. H. A. Wade and his assistant, the writer, on the first gynecological division of the Williamsburgh Hospital have iodinated the endometrium in 208 cases. Except for diagnostic purposes the curet was never used.

Unfortunately the question is mainly theoretical and it is impossible to say whether the iodine performed all it should. We have had no bad results that could be traced directly to the iodine. If in addition to the iodination a Webster-Baldy operation was done and months later the uterus was found out of place we do not attribute the condition to the iodine but to the major operation.

The 208 cases we have iodinated have been treated for from one to three or four conditions. For instance, a case has a lacerated perineum, lacerated cervix, retroverted uterus and a cystic ovary. Therefore, one diagnosis cannot be given it. In the following report we had to deal with 502 separate conditions in 208 women. With the exception of the abortion, septic and miscarriage cases, 49 in all, further surgical work was done besides iodinating the uterus to correct the pathological condition present. It is of interest to note the various findings, alone or in combination, in which the iodine was used.

The following are the cases:

Abortion, 34. (This includes all types).

Miscarriage, 2.

Post-partum sepsis, 13. (This only includes those cases where iodine was indicated. In many cases the uterus was left alone).

Anteflexed uterus, 10.

Endometritis, 48. (This includes only those cases where a clinical diagnosis of endometritis was made. No doubt in connection with other lesions an endometritis was present which we have not noted).

Infantile uterus, 7.

Sterility, 3. (We have named them sterility and not given the cause as no apparent cause was discovered).

Retroversion of uterus, 121. (In every case a repair of the pelvic floor was done).

Prolapse of uterus, 8.

Salpingitis (various forms), 48. (These were chronic cases. No acute cases are in this report).

Cystic ovary, 17.

Laceration of cervix, 63.

Laceration of perineum, 128. (The iodine was used to prepare the field above).

In conclusion it is emphasized that the curet is an instrument not capable of doing that which it was originally intended to do, that curettage of the uterus, in the hands of the inexperienced, is a difficult operation, that it is capable of doing more harm than good, and that it is many times employed without reason, has become a habit handed down from a past generation and could be dispensed with as a therapeutic agent.

The 50 per cent. tincture of iodine, with the proper technique, is a better agent in place of the curet, and to date is the best substitute we have for uterine curettage.—*The Long Island Medical Journal*, March, 1914.

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THE NEW KNOWLEDGE OF 'LIFE' AND
THE NEW THERAPEUTICS.

By CHARLES W. HAYWARD,

Barrister-at-Law, M.D., C.M., D.P.H., M.R.C.S., L.R.C.P.

FOREWORD.

IN so far as this paper details the "New Knowledge," I have preferred to give free and full quotations from the various authorities. The statements are therefore more ably presented and carry more authority than had I translated them into my own language. Each quotation is clearly indicated, and followed by a number indicating its source by reference to the grouped list at the end. Personally I claim credit or blame, for : first, the selection and presentation of the evidence, *i.e.*, the "getting up" of the case ; secondly, the comments and deductions weaving the testimony of the various witnesses into one harmonious setting ; and lastly, the "summing up," which I trust will command recognition as "unbiased", and the "verdict," which I hope will compel all reasonable scientific men to admit is proved by the evidence to be both "just" and "equitable."

C. W. H.

We who have broken away from the "old knowledge" in therapeutics, and have established a "New Science of Medicine"

founded upon scientific observation, should always be eager for new and wider knowledge. Our "New Theory of Medicine"—although it has stood the test so successfully during more than a hundred years of daily experiment both by proving upon physiologically normal human beings, and clinical results upon pathologically abnormal human beings—should make us the most ardent supporters of every advance in every science which may tend to elucidate the secrets of "life" and "matter."

Every extension of knowledge into the ultimate components of matter and energy will give us progressively increasing knowledge of the "why and wherefore" our inductively derived theory so agrees with nature as to warrant its reception as a "law." It may even result in the discovery of such wider knowledge as will establish a "universal law" which, while including our present therapeutic law, will extend man's usefulness in preventing or correcting any deviation from the absolutely true normal interactions which constitute perfect health and happiness. Personally, I never tire of reading the accounts of new discoveries by searchers and experimenters in each and every branch of science. The "romance of science" far exceeds in interest and wonder the imaginings of any novelist and the dreams of any poet. I am told that this devotion to analysis of the energy and matter of the universe destroys all romance. I deny it. I have known the romance of the ignorant awe of "the wonders of the heavens." I have experienced the oppressive theory of old-time theology and creation, which permitted of nothing but unquestioning faith and worship, and the fetters of guesses made two thousand years ago at knowledge to which we have not yet attained. I have rebelled against an impotence which compelled me to gaze upon each living and non-living thing in nature as if it were an impregnable rock against which my reason and my yearning for knowledge dashed themselves in useless surgings. All the "romance" within these former narrow limits was based upon ignorance. My greatest pleasure in life has been from eager following of the pioneers of knowledge, and whatever crumbs from their tables I have been able to gather, have fed me and

built up a new strength. The feeble reflections from their search-lights which I have treasured concerning the laws and nature of the universe have changed my ignorant wonder to a respectful regard. The still too limited knowledge of the synthesis and evolution of inorganic and organic nature which I have gained, has shattered my "doll's-house" theology, and filled me with a grander awe of that one force which has acted eternally, with no deviation, evolving greater and ever greater marvels of complexity and progress, and which demands more intense reverence with advancing step of knowledge.

The dim insight I have acquired into the ultimate secrets of the evolution of life and matter, have endowed my reason with hope and longing for further light. The "romance of science" and the worship of knowledge have banished for ever the older romance and worship founded upon ignorance, but they are as much grander than their forerunners as the emotions produced by the grandest landscape gleaming in the sunlight are to the ignorant terror of a darkened cave.

Many of you may already know more of this "new knowledge" than I can place before you ; still I hope that my account will have both novelty and interest to some, and interest—if not novelty—to the rest.

In regard to the special department of science bearing upon "life," I have been interested to find that the new knowledge tends to strengthen and even partially explain the system of therapeutics with which we are connected. We therefore have a right to congratulate ourselves that the evolution which has taken place in the science of medicine is in accordance with our new therapeutics, initiated by Hahnemann, and to the advancement of which each of us has contributed his share, upheld by a devotion to principle even at the cost of loss of rewards in position and money, and of suffering from insults and abuse from the rest of our profession—abuse with no other foundation than wilful ignorance, combined in many cases with despicable self-interest and hypocritical self-righteousness.

I shall call your attention to one or two points in the "new knowledge of life" which ought to establish our faith, strengthen our principle, encourage our hearts, and confound our detractors with irrefutable proof of their unprincipled and ignorant prejudices.

"Life" depends upon "matter" for its existence. It cannot exist apart from "matter" and it is, in fact, nothing more than the totality of the energies manifested by the building up and the breaking down of the most complicated molecules of matter, consisting of a microscopical "nation" of atoms, some single, others bound together into relation-groups of various numbers and complexity, each and all confined within the single "race-molecule"; each atom, or group of atoms, performing its own function and movements towards the manifested combined activities of this restricted and populous community.

The fortunate flash of reason and science which first illuminated the deeper recesses of the constituent atoms, and thereby opened up the marvellous and fascinating world of the "new knowledge," dates only from the year 1896, when Becquerel, in Paris, discovered "radioactivity," which was followed by the further discovery in 1905 by Röntgen of the X-rays. Before this time the knowledge of the atom and molecule compelled admiration, and I shall give you a few points which aroused my interest, simply offering as an excuse that in doing so I am taking the level of my own ignorance as an average, and therefore hope that some of you may derive both interest and information from a record of them even by my 'prentice hand.

The "atom" is the smallest particle of any element which can exist alone. In reality it can only exist alone temporarily in a "nascent" form. It will combine with one or more atoms of another element, or if it cannot get atoms of other elements it will combine with another of the same element. This desire to unite with some other atom accounts for the extraordinary reactivity of atoms when set free in what is called their "nascent state."

The "molecule," formed of two or more atoms of the same or different elements, is the smallest single particle of any substance, whether element or compound, that has a separate existence.

Robert Brown, the botanist, discovered in 1827 that every molecule was an embodiment of "perpetual motion." It has since been proved that the energy of this motion depends upon the "absolute temperature" of the molecules, and it is necessary to recognize that to get this "absolute temperature" we must add 273 degrees below the zero of our thermometers, using the Centigrade calculation. Therefore the "absolute temperature" of any matter is "273" degrees, even when our Centigrade thermometer registers "zero." This "molecular movement," known as "Brownian movement," can only be stopped by reducing the temperature to "absolute zero," that is - 273° Centigrade.

In any gas the movement is illimitable; the molecules rushing about so that, if not confined by a containing vessel, even the smallest number of molecules which escape diffuse themselves equally throughout a room or the atmosphere. "Every cubic centimetre of any gas, measured under standard conditions (0° C. and 760 millimetres barometric pressure), contains twenty-seven million-million molecules. The weight of a single molecule of hydrogen is about three million-millionths of a gramme, and its velocity at 0° C. is rather more than a mile a second" [2]. In liquids the movement is more restricted, but none the less inevitable. The "surface tension" of the fluid restrains their flight, and confines the rushing molecules within its own limits.

In solids the movement is further restricted to vibrations, but it still persists; rest being impossible above absolute zero, as "absolute temperature" of any extent must produce this inherent movement in all molecules. "Perpetual motion" is neither a dream, nor an impossibility; it is here in each and every molecule, but it is an inherent property, and cannot be translated by man into a visible reality.

As the "matter" of which "life" is the expression of the highest combined activities is composed of atoms, I will now

proceed to follow out the evolutionary processes, leaving the "new knowledge" concerning the atom until we have obtained the "matter" itself, and desire to trace its energies. All the recognized eighty odd elements are composed of characteristic atoms, which, excepting in the nascent state, are bound together in twos or more to form the molecule. The characteristic features belong to the atom, each atom of each element having a different weight, known as the "atomic" weight—varying from the lightest atom known, *i.e.*, hydrogen, which is therefore taken as the unit 1, up to uranium which is 239.

The atomic weights of the various elements are not haphazard, but have a wonderful relation to one another. It has been found that if any one element be taken, and an "octave" be struck by counting to the seventh element up or down the scale of atomic weights, the element then reached responds as if in tune with the element originally selected. It has similar characteristics in qualities, melting point, &c., and in this way the elements can be grouped into "chords." It has even been possible to state that from one or other such chord, some note is missing, and that there must exist some still undiscovered element which ought to give the missing note. This has been verified by subsequent discovery prompted by this law, in a similar manner to that in which several unknown stars have been sought for and discovered because the behaviour of an observed star necessitated some unexplained influence to account for its resultant movement.

Atoms also fall into groups according to their "valency." This is best understood by means of the old symbol of "bonds" or "clutches." An atom which has only one such bond is a "monad," and can only combine with one bond of an atom with two or more such bonds. For our purpose in regard to living matter, the most important element is carbon, which is a "tetrad," having four of these imagined "bonds," and also possessing in the highest known degree the extremely important power of using one or more of these bonds in mutual attraction with one or more other atoms of carbon.

Another valuable character is that some compound molecules can act as "monads," thus adding complexity whilst only mono-

polizing one bond of the "key-stone" element. Hydroxyl, HO, and ammonia, represented by the formula NH_3 , can lose one of its atoms of hydrogen, and then the remaining NH_2 can enter into further combinations as a monad. Those characters are not of so much importance in inorganic chemistry, but the molecules necessary for "life" are of extreme complexity. Still there is a practical limit beyond which necessary stability cannot exist. "Accordingly, without true atomic union between them, there may be ten, twenty, thirty, sixty molecules forming a great aggregate molecule. This is the form in which proteins occur in living cells, and is an example of an organic colloid. A most important point to note is what the chemist calls the 'liability' or 'mobility' of such a colloid. Its strength for the purposes of vital phenomena lies in its very weakness as a chemical body. It exists in a state of the most delicate balance, ready to play in and out, and vibrate like a piece of mechanism, only far more delicately, responding to every change in its environment. Its dimensions as an aggregate and the constitution of its parts depend on its environment, and especially upon its nutrition. It must once it has been constructed, be fed with the proper pabulum, nothing must be offered which will unite too strongly and lock up its activities. Material must be given to it adapted to its uses, or upon which it can play and produce either its own building materials, or obtain energy for its constant cyclical changes.

"There is, here, a near approach to the life material, and it is to be observed that function and activities alter and new creative phenomena develop with developing structure." "These living properties depend on labile molecular unions, and are not only found in living structures, they are to be met with in inorganic colloids" [1]

Here, then, we have a near approach to "life" and it is owing to the almost ungraspable fact that these colloids show illimitable, but unrecognizable, variety in the various tissues and organs of the body, that the many various interchanges, actions, and functions occur in that many million-celled democracy which we term the "human body."

The differences necessary between the different varieties of colloids in the cells is beyond the dreams of our "infinitesimals." "It is thus seen that in the typical colloidal solution there exists a most delicate balance of the feeble affinities of the colloidal molecules, so that within narrow limits they can build together or be pulled apart, and the value of this in life processes is obvious". [1] "Variations in minute detail of colloidal arrangement in itself, and in relationship to dissolved pabulum in the shape of organic and inorganic crystalloids, lie at the root of the varying activities of the cells, and of all physiological and pathological changes" [1].

We see here, and we shall recognize more fully again later on, that large and poisonous doses of drugs are not necessary in such a delicate balance, and that our method of influencing such extremely delicate interactions by means of minute fractions to restore the wavering balance is both more scientific and more true to Nature than the orthodox crude shovelling of powerful masses, flung into the scales with unreasoning brutality.

This is a convenient place to point out that the "law of similars" also seems more scientific than any other yet discovered. We know that functions may be deranged, as in the cells of the nervous system, by too much stimulation and engorgement, and by starvation and lowered vitality. Similar pathological symptoms may occur in both these conditions, disordered and erratic discharges of energy, and failure of physiological function. Our rule of "the totality of the symptoms" acts as the key to the disturbing cause, and antidotes the ill at its source.

A curious example of "similars" occurs in spectroscopy. If a colourless flame, as a spirit lamp, or a Bunsen burner, has some sodium placed in it, the characteristic yellow colour of sodium appears, and when this is passed through a spectroscope, the usual bright lines of sodium stand out prominently. But if light already containing the light of burning sodium vapour, as from the sun, is passed through a tube containing sodium vapour, and then through the spectroscope, it is found that no sodium lines are present in the resulting spectrum, but that

these lines which would otherwise be present are blotted out and in their places appear black lines. Here the vibrations due to the sodium vapour in the light from the sun are entirely cancelled by the identical vibrations in the sodium vapour contained in the tube ! Similar vibrations cancel one another in all vapours of all elements. This fact is the basis of all spectrum analysis. Here, at any rate, Nature herself exclaims : *Similia similibus curantur !*

Before tracing this molecular basis of life into the "cell," let us refer to the "new knowledge" of the "atom." The discovery of radio-activity has revolutionized our knowledge of the atom, and provided a guide leading ever further and further into the maze of Nature's mysteries. "The study of radio-activity has disclosed intermediate stages between the chemical atom and the unformed pre-matter, or luminiferous ether, which are of high interest from the point of view of evolution. "When the different types of radio-activity produced either by an X-ray tube or a radio-active substance, such as a salt of uranium or radium, are examined, it is found that these can in each case be resolved into three types, which are distinguished by letters of the Greek alphabet as alpha (α), beta (β), and gamma (γ) radiations respectively. They are distinguished, amongst other things, by their relative penetrating powers for substances such as the metals which are opaque to radiant light or heat. The metal aluminium is used as a standard, and it has been found that while the alpha rays are readily stopped by a piece of aluminium leaf of 0.05 of a millimetre (or about $\frac{1}{500}$ in.) in thickness, it requires 5 mm. of aluminium to get rid of the beta rays nearly completely, and a column of about 50 cm., or 20 in. in English measure, is calculated to be necessary for the absorption of gamma rays. The relative penetrating powers are thus approximately as 1 : 100 : 10,000.

" While the alpha and beta rays consist of minute particles, the size and energy content of which can be accurately measured and their actual mass determined, the gamma rays are waves or disturbances in the ether propagated in irregular pulses or

surges with the velocity of light. It is the alpha and beta particles which interest us chiefly here as being the initial stage in the syntheses of matter, and the commencement of that long train of interplay between matter and energy which leads up in increasing complexity of molecular structure and attendant change in inhabiting energy till man is reached.

"The beta particle is by far the smaller of the two, and is identical with the electron, or electricity bearer. The form of energy which it carries is electricity, and it is the movement of a constant stream of millions of millions of such beta particles or electrons along an electric wire or other conductor which constitutes an electric current. These minutest of all particles may be deflected out of their straight course when they are in motion, by a charged surface placed parallel to their flight, or by a magnet, and the course of deflection is the same as that of a stone or bullet flying through the air. From the velocity and the deflection and other experimental data the mass of the particle and the value of the electrical charge upon it can be calculated. The mass of the electron lies between $\frac{1}{1836}$ and $\frac{1}{2000}$ of that of a hydrogen atom. Since such electrons can be obtained either by spontaneous disruption of radioactive bodies, or; by means of electric energy, from ordinary stable forms of matter, they are believed to be the constituents of ordinary atoms from which such atoms are built up.

"The alpha particle differs from the beta particle in two chief ways; first, the alpha particle carries a positive charge of electricity, as is shown by the fact that it is deflected in the opposite direction to the beta particle by a magnet or an electrically charged body; and secondly, by the fact that it is many times larger, possessing twice the mass approximately of a hydrogen atom. When the alpha particle impinges on solid matter it penetrates some way, loses its electrical charge, and slowly diffuses out again as an atom of helium, one of the chemical elements discovered in recent years" [1].

"At once arises a question: If the period of average life of radium is only 2,500 years, how it is that there is any radium

still in existence? Historical records go back to many times this period. Even if the whole world were originally pure radium 100,000 years ago, the quantity now present should be less than that actually contained in the common rocks and soils constituting its crust. . . . Now radium is found in uranium minerals. Uranium is radio-active, and is therefore, changing. But into what? . . . There are 3,000,000 parts of uranium to one part of radium in minerals. Therefore, it can be proved, the period of average life of uranium is 3 000,000 times that of radium, or 7,500 million years. But this gigantic period agrees very well with the extremely feeble radio-activity of uranium. The latter is many/millions of times less than that of radium, and, therefore, the substance must be changing many millions of times more slowly. . . . At least there is no difficulty in accounting for the maintenance of radium from uranium for periods of tens of thousands of millions of years, without of necessity being compelled to suppose that the quantity of uranium in the earth is being in some still unknown way maintained" [2].

That further work is required before complete agreement in this field is obtained is proved by differences in statements made by recognized authorities.

"In June, 1903, Sir William Ramsay and Mr. Soddy discovered that this radium emanation decayed into, or became transmuted into, an entirely different element with which the world of science has been acquainted for years—namely, the element helium. By observing through a spectroscope a spectrum tube containing the radium emanation, they were able to observe the actual birth of helium. At first, no spectrum lines characteristic of helium were observed; but presently they appeared, faint at first, but ever increasing in brightness until they became unmistakable, and the birth of helium was an accomplished fact. Helium has been a well-known element ever since its discovery on the sun by Lockyer, twenty-five years ago, and its subsequent discovery on earth by Ramsay, in 1895. We have discovered that it is a transmutation product of element radium" [4].

"Our theory of an atom is that it is a sphere of positive electrification, enclosing a number of negatively electrified corpuscles, the negative electricity of the corpuscles exactly balancing the positive electricity of the enclosing sphere. On this theory we have been able to explain all the mysteries of matter. . . " [4].

But Mr. Soddy himself says: "It is best, therefore, not to be in too great a hurry to abolish the old distinction between atoms and compounds of atoms, or to believe the ancient theory that matter, though apparently diverse, is philosophically simple, and that all atoms are merely various compounds of some primordial stuff or 'protyle'" [2].

I consider that this statement by Mr. Soddy only introduces unnecessary confusion. Norman Lockyer has—by means of spectrum analysis—built up the "evolution of the elements" parallel to the story of evolution in the animal and vegetable kingdoms. But in this case "heat" takes the place of "age." As the higher animal forms are absent from the older layers of the earth, so the higher elements are absent from the hotter stars. As "heat" increases, more and more forms are resolved, until in the gaseous (and hottest) stars—i. e., the Arogonian stars—the temperature attains to 30,000° C. The "elemental remains" found here correspond to the restricted fossils of the oldest rocks, and nothing is found except "a strong gas of the helium family and faint enhanced lines" [4].

I think that the next move is up to Mr. Soddy. That the analysis of nature does not destroy romance is proved by one point I should like to mention. No "positive" electron has been found. "If positive electrons also exist, and take part in the flow of the current, these would, of course, move in the opposite direction. But so far the positive electron, though much sought after, has eluded pursuit" [2].

"The key to future progress, as already remarked, is the answer to the question, 'What is positive electricity?'" [2].

Yet another authority states: "Buchan has pointed out that 'Lemstrom has shown, by observations and experiments

he made at Sodankyla, that auroræ are due 'to currents of positive electricity illuminating the atmosphere in their passage to the earth' " [7].

Here, then, are two rival "detective theories," the working out of which, or even the mere interest in watching developments, contains romance never equalled by the much belauded and eagerly read "detective stories" which send up the circulation of our ephemeral magazine literature.

We must now leave this field of inexhaustible interest and return to the "colloids."

"All the known properties of colloids can be traced to feeble molecular affinities between the molecules themselves, causing them to unite into multi-molecules or 'solution aggregates,' and to balance between such affinities and similar feeble affinities for crystalloids in common solution with them, and for the molecules of the solvent. The whole essence of the colloidal condition is that of a balance play of energies in the most delicate equilibrium. Quantitative differences exist, giving classes of colloids which differ from one another in stability. Some are upset with the greatest ease, by either adding a slight excess of crystalloid to the solution, or by heating the solution a few degrees in temperature; others, more delicate still, even undergo slow spontaneous change when left to themselves. On the other hand, colloids are known of great stability which are not easily upset even by boiling their solutions, or by saturating them with salt." "These variations are a peculiarity of the colloidal state of great importance in relationship to the phenomena of life" [1].

Some colloids can be partially coagulated by gentle heat, and then on cooling return to their original condition.

"The view was foreshadowed long ago by Sidney Ringer, that muscular contraction is an incipient coagulation which becomes reversed, and again repeated in cyclic alternation. This view was suggested by similarities in chemical character between the products of muscular contraction and that coagula-

tion of the muscles and juices which causes muscular stiffening, or 'rigor mortis' after death. Heat is not the only cause which can induce incipient coagulation; a slight change in chemical reaction from alkaline towards acid causes opalescence, due to a running together of the colloid into larger aggregates, which commence to be big enough to interfere with the light waves, and so cause opalescence. If the amount of acid be increased the opalescence passes into true coagulation" [1].

What are known as "interfaces" occur on the surfaces of the minute microscopic granules which are found in all living cells. Here also there concentrate not only ordinary colloids present in solution within the cell, but bodies formed by the cell called "ferments," or 'enzymes,' themselves also colloids.

"This concentration within the cell on surfaces favours union, and it is in this way, by continued aggregation, that starch granules, protein granules, and drops of fat or oil grow within living cells.

"It is a wonderful adaptation of nature that these ferments which produce union and reduplication within the living cells are exactly the same substances which digest and break up the food when they are thrown out by the digestive glands into the alimentary canal, and so form soluble matter capable of absorption" [1].

"Variations in minute detail of colloidal arrangement in itself, and in relationship to dissolved pabulum in the shape of organic and inorganic crystalloids, lie at the root of the varying activities of the cells, and of all physiological and pathological changes" [1].

Life is due to the totality of the delicate reactions of the colloids in the cells.

"Given the presence of matter and energy forms under the proper conditions, life must come inevitably, just as, given the proper conditions of energy and complexity of matter in the fertilized ovum, one change after another must introduce itself and give place to another, and spin along in kaleidoscopic sequence till the mature embryo appears, and this in turn must

pass through the phases of growth, maturity; reproduction, decay, and death" [1].

Although initial production of life from non-living matter is not yet proved, the experiments of Bastian seem to show that he has accomplished this in sterile solutions of (1) sodium silicate, a trace of phosphoric acid, and a small amount of ammonium phosphate; and (2) sodium silicate and pernitrate of iron—both in distilled water. Time is essential to these experiments, from three to six months. His success has been denied. "The conditions in these later experiments of Bastian are essentially different from those of his earlier work, a fact which does not appear to have been fully realized by those who have adversely criticized them without attempting their repetition" [1].

The foremost of American mind-embryologists, President Stanley Hall, agrees with Darwin that "the soul of man is no whit less the offspring of animals than is his body. Our psychic powers are new dispensations of theirs. The ascending series of gradations is no more broken for the psyche than for the soma" [3].

That the activity of colloids depends upon suitable pabulum is shown beautifully by an experiment. "An isolated beating heart from which certain inorganic salts are washed out by an irrigating stream containing none of them, soon ceases to contract, but on restoring these inorganic salts the heart soon starts automatically to work once more. The same can be proved for all living cells; the appropriate inorganic crystalloids must be there, and present in definite amount neither too little nor too much, so as to form the crystallo-colloids, or the living cells cease operations and soon thereafter perish" [1].

Life is always associated with some individual mass of colloidal structure called a "cell." Cells are infinitely varied in composition, structure, and function. "As a matter of fact, some cells are formed, pass to maturity, and perish almost daily, while others last as long as the animal

itself. Many of these latter cells form master-cells of the body, of vital importance, and their decay determines the downfall of the whole vast community. Such cells are to be found in the brain and other parts of the central nervous system, in arterial walls, and in mechanisms which control the heart. As age advances the work of these, and other cells, alters, and chemical products are thrown out and accumulate, which sow the seeds of decay. Decline and death are accordingly part of a normal process just as much as birth and growth are at the early parts of the course of life, and, so far as our present knowledge leads us, all we can hope for is by watchful care to prevent earlier decay by seeing that these delicate mechanisms are not clogged and poisoned by effete products of a poisonous nature manufactured by wrongful habits of life, either in the body itself, or added from without by unsuitable nutrition or the invasions of disease" [1].

I would like to mention one or two points about cell division. "Before reproduction commences the nucleus possesses a reticulate or a sponge-like structure, but at a certain stage in the cell-life some chemical alteration, due to a heaping up of energy, causes this structure to alter spontaneously. The peculiar material of the nucleus then forms itself into a thread-like structure so as to look like a tangled skein of thread, which later shortens and thickens. Then in a most remarkable way the thread divides or becomes cut up into a definite number of short lengths called chromosomes. The number of these chromosomes is an absolutely fixed and always an even number in every species of higher animal or plant. In man there are, for example, always twentyfour of these chromosomes formed. The chromosomes were formed by equi-distant cuts across the skein, but now each one of these pieces splits *lengthwise*, and at about the same time two attraction points are formed some distance apart in the cell, and from these attraction points (or centrosomes) exceedingly fine gossamer-like threads are formed, radiating from the centrosome, and attached along the length of each split chromosome. Along

these fine threads, the split halves of the chromosomes part company from each other, and travel apart from each other, until finally one exact half of the material of the nucleus in the form of split chromosomes is surrounding each centrosome.

"An inverse order of affairs now ensues at each of these daughter nuclei, whereby first a skein and then a reticulum is formed. Contemporary with these latter changes in the daughter nuclei, the rest of the colloid material of the cell begins to divide simply around the two daughter nuclei, indenting, becoming hour-glass-shaped, and finally dividing into two halves. In this way two cells are formed, which increase in size until once more similar energy conditions arise and lead to a fresh division, initiated and carried through in the same fashion.

"There is nowhere outside living matter a set of energy phenomena found to occur *spontaneously* at all resembling this remarkable sequence of changes" [1].

"There is one interesting exception to the process of nuclear division described above, and that is when the first division of all occurs in the maturation of the ovum, which precedes the sexual production of a new individual in the higher plant or animal. An early stage in the history of the new individual is a union of two cells, one from a male and the other from a female parent. If the fusion of the two nuclei took place, there would obviously be at each generation a doubling of the amount of nuclear matter and twice the normal number of chromosomes. Nature arranges against this by a remarkable preparation of each parental nucleus. In each *first* division which occurs in each parental cell before the male and female elements come in contact only half the usual number of chromosomes is formed, then for some unknown reason a rearranging division occurs with the usual number of chromosomes, but half the amount of material in each one. At each of these preparatory divisions *in the female cell* one of the two nuclei formed is extruded from the cell and atrophies. The female cell does not divide as a whole in these two divisions: only its nucleus

divides. After the completion of this curious process, which is known as maturation, a reduced male nucleus and the reduced female nucleus unite to form a first mixed nucleus to the fertilized ovum, in which the two sexes obviously share equally. The purpose of the rejection of a part of each nucleus has caused much discussion, and is not yet at all clear, but it is probably closely concerned with heredity and species preservation " [1].

This is of especial interest, as some authorities hold that, as the cells which are to form the reproductive organs are separated off at a very early period, they cannot be affected so as to produce modifications in subsequent generations.

"It is idle to say that what living creatures do or fail to do has no racial importance. Another certainty is that by its activity a living creature, being no mere puppet of fate, may alter the whole situation. This, again, may have evolutionary interest, even if it ends fatally " [3].

". . . Some change in the environment of the parent provokes a variation in the offspring. The best instances, as yet, are to be found in the experiments carried on for many years by Tower on beetles of the genus *Leptinotarsa*, which he subjected to unusual conditions of temperature and humidity, when the male and female reproductive organs of the parent were at a certain stage in their development. The body of the parent exhibited no modification, but the external influence, saturating through the body, was sometimes operative on the germcells and thus on the offspring. In some cases there were remarkable changes in colour and markings, and even in minute details of structure. And there was no reversion to the parental condition " [3].

Each living cell possesses its own activities, but the necessary actions and reactions require time for their performance, and it is impossible for cells to continue to give out energy continuously, without the necessary intervals for recovery. This necessitates a sort of "rhythm."

"All energy transformations are oscillatory or phasic in their discharges. Each energy transformer has its phasic period, or, revolution time, in which it passes through a cycle of oscillation. This is equally true of the living energy-transformers or living cells, and the period varies from one type of cell to another. . . . As long as life lasts there is no complete cessation in the flow of energy, but always in all living things there are alternating periods of activity and repose, of waking and sleeping, of action and reaction, of freshness and fatigue" [1].

"It has been shown by Schäfer that the nervous impulse sent out the voluntary muscles is not continuous, but consists of a series of impulses at the rate of ten to twelve per second. Now the period of passage of each of these over any given portion of nerve is only one ten-thousandth of a second, and on adding up the number of impulses in a second, it is obvious that at most the tissue is only active for twelve ten-thousandths of a second in each second, or for about 0.12 per cent. of the total time. There is thus sufficient interval for recuperation between each period of activity. Even when an electric current of 1,000 shocks per second is used as a stimulus, there is ample time between each stimulation for recuperation. At a much higher rate of stimulation than this the nerve tissue solves the problem by ceasing to respond. A strong enough current to light up powerful electric lamps can be sent through the human body if the electric oscillations exceed 30,000 to 40,000 per second, without causing any effect upon the muscles or nerves.

"The rate is much slower for the contractions of heart muscles, although still very rapid amongst biological phases. As a result, the consequence of events becomes more obvious. Just after each contraction, so far from not being fatigued, the heart muscle is so completely fatigued that it has what is called a "refractory" period. It relaxes and cannot be caused to contract even by a strong external stimulus. It rapidly, however, loses the products of its fatigue, its colloids rearrange their molecules with great speed, and its energy charges accu-

mulate so rapidly that soon it passes into another phase of activity automatically without any stimulus from without" [1].

The energy of the cells is known as "biotic" energy. The delicate rhythmical activities are interfered with in all departures from normal, and the totality of such departures constitutes the "symptoms" from which we attempt to recognize the diseased condition present.

An example of the peculiar delicacy of these activities is found in the case of pigment in the skin and hair of animals and man. This coloration is due to the presence of a substance called "chromogen," which is not in itself coloured. It requires to be acted upon by a ferment called "tyrosinase," and according to the quality and activity of the "ferment" present, the yellow, orange, red, or brown colour in skin and hair is produced. White races have chromogen in their skin and hair, but the ferment only in the latter. The different races have more and more of the ferment in their skin also. Flat fish, the under surface of which remains white, if placed in a tank lighted also from below, develop pigment on their under surfaces.

When the cells are invaded by micro-organisms, it is not the micro-organism itself which produces the damage, but a poisonous substance which it secretes, known as a "toxin." The danger may not even be where the micro-organism is found. In diphtheria the organism occurs in the throat, but the real danger is that the toxin produced in this situation is carried to, and has an special affinity for, the heart muscles, where the organisms do not occur.

"Thus, the organism responsible for the production of diphtheria, for example, grows in a restricted area of the tonsils and throat, small compared with the bulk of the body. Apart from occasional difficulties of a mechanical nature connected with respiration, the local effects are not dangerous. But the minute organisms produce a soluble chemical substance, the diphtheria toxin, which is of the same order of deadliness as a snake venom.' This is discharged into the blood-stream, and is

absorbed chiefly by two types of body-cells, on account of the above-mentioned chemical adaptation of its molecule to their colloids. These two tissues happen to be master-tissues of the body, the work of which cannot even temporarily be interfered with, namely, the heart muscle, and certain important nerve-centres controlling respiration and heart-beat. As the poison from the diphtheria organisms locks into the labile oscillating colloid aggregates of these rhythmically working cells, their character alters.

"It is as if a strange key had become jammed in a beautifully constructed lock, so that its own key could no longer shoot the bolt to and fro. When the amount of poison absorbed passes a certain limit, the heart becomes irregular or the respiration troubled, and soon there too often happens the sudden death from heart collapse, or, if that be prevented, the serious paralyses of other nerve centres seen later in severe cases of the disease" [1].

In a similar manner various cells of the body secrete various substances known as "hormones." These are "internal secretions," and quite apart from the secretions of the glands, &c., with which we are all familiar. They are in the nature of "excitants," secreted by some colony of cells for the benefit of some other distant colony, and in some cases these internal secretions are of such vital importance to the recipient cells, that deprivation of the supply leads to changes in many cases fatal to the entire organism.

some of these necessary hormones are contained in the diet. When the Indian coolie lives upon rice, unless the thin brownish layer which surrounds the white part, be included in the diet, the disease beri-beri results. It can be warded off, or relieved by the addition of this layer to a diet of the polished rice.

Scurvy is another disease from absence of a hormone from the diet, and it can be rapidly cured by fresh vegetables—or the inner layer of potato rind, or fresh fruit.

Various glands exist in the body with no external secretion or obvious uses, but wider knowledge has proved that they secrete hormones or excitants. If the suprarenals are diseased

we get Addison's disease. "Brown-Sequard showed that the removal of these tiny glands always led to fatal results. This was confirmed by Schäfer and other observers, and the clinical picture is that of an excessively rapid Addison's disease. The discovery was next made by Schäfer and Oliver that these glands are constantly supplying to the blood a chemical hormone which possesses a tonic or stimulating action upon the heart and arteries, or arterioles, leading to the capillaries. This substance has been isolated, and is known as 'adrenalin.' It has even been prepared artificially, and its chemical constitution is well known" [1].

The thyroid has a secretion of a colloidal nature, rich in iodine. When this is deficient the well-known stunted development, idiocy, and other distressing symptoms occur. Exophthalmic goitre is due to excessive secretion and the consequent over-stimulation. Where the secretion is deficient the results of giving a preparation of a thyroid of an animal are wonderful. "The results as a rule are most astounding, unparalleled by anything in the whole range of curative measures. Within six weeks a poor, feeble-minded, toad-like caricature of humanity may be restored to mental and bodily health. The skin becomes moist, the pulse-rate quickens and the mental torpor lessens" [1].

The pituitary gland when hypertrophied during youth, leads to "giantism," but if hypertrophy occurs after the growth of the skeleton, we get acromegaly, with over-growth of the bones of the hands, feet, face, and especially of the jaw. "Small as the pituitary gland is, it is composed of two parts of quite different function. It is only the anterior portion which is concerned in regulation of osseous growth, the posterior portion secretes a hormone which has a somewhat similar action to the suprarenal, but feebler and differently evoked. As has recently been shown by Schäfer, it also stimulates the secretion both of the kidney and of the active mammary gland" [1].

"In addition to these remarkable chemical sympathies of the ductless glands, other glands in the body possessed of ducts,

such as the pancreas, which produces a powerful digestive secretion, also are found to possess internal secretion. Thus, ligation of the duct of the pancreas so as to stop the action of its secretion, does not cause death. The work of digestion is performed vicariously by other secretions. As much as two-thirds even of the gland and duct may be removed without producing serious symptoms. But if the remaining third be removed, or if the total gland be removed in the first instance, then death within two or three weeks, from the severest form of diabetes, is the invariable result" [1].

It has been reported recently that: "Dr. R. Robinson, in a paper read before the Academy of Science in Paris states that he has obtained a 'hormone' from the appendix, which markedly stimulates contractions of the large intestine, and is therefore a natural agent against constipation. It is certain that appendicitis cases are nearly always constipated, lacking no doubt, the necessary natural stimulus, but also it is clear that the appendix is not a useless organ and should not be too highly removed" [8].

Thus is another "fashion" in medical science proved to be based more upon caprice and love of popularity rather than upon knowledge and rationalism.

Now, from this necessarily incomplete "cinematograph view" of the "new knowledge," what is of particular interest to ourselves?

First, minuteness of the amount of drug is fortified by the proved hyper-minuteness of the excess or deficit in chemical pabulum or hormones necessary to affect cell life in all its bearings. The thin layer of rice husks in the diet prevents beri-beri. An unrecognizable trace of chloroform vapour will paralyse the mechanism of the heart. Our position in this particular is now recognized. Professor Osler said: "It is not as if our homœopathic brethren were asleep; far from it, they are awake . . . to the importance of the scientific study of disease. It is distressing, that so many good men live

isolated, in a measure, from the great body of the profession. The original grievous mistake was ours—to quarrel with our brothers over infinitesimals was a most unwise and stupid thing to do” [5].

The proving of drugs upon healthy individuals determines the groups of cell actions which are deranged by each drug. We may not be able to point out or identify this affected colony, but at any rate we elicit the sphere of influence of each drug, and there is no wild “charge of buckshot,” but a limited, well-directed aim.

These symptoms of provings can only result from some disturbance of cell vitality, and similar symptoms occurring idiopathically can only exist from an identical cause. Nature herself demonstrates that similar vibrations cancel one another (as in spectrum analysis), so that our law at any rate corresponds to a proved natural law.

A thought just occurs to me which appears to be of sufficient interest to excuse a digression. The entire activities of “life” and the complete “properties” of inorganic substances depend upon “molecular qualities.” All molecules of matter are in a state of “perpetual motion.” In “solids” this is restricted to “vibrations.” In liquids it is restricted by “surface tension,” but is real movement. In a gas movement is unrestrained, except by a containing vessel. All “free molecules” diffuse themselves equally through space. “Free atoms” are practically only found in the “nascent state” and here, you will remember, they have extraordinary activity. This increase of “activity” continues as we deal with particles smaller. The “alpha particle” has been examined by Rutherford. “After many years’ continuous effort, all three data were obtained separately. The velocity is, in the various cases, between $\frac{1}{15}$ and $\frac{1}{20}$ that of light. Hitherto the fastest known moving material thing was the meteor, some of which attain a speed of 40 miles a second. This is only $\frac{1}{360}$ of that the α particles, some of which travel with the speed of 12,000 miles a second” [2].

The β -rays are 2,000 times smaller in size, but their activity is enormously greater. "The β -rays are free-flying single negative electrons, but their velocity is, in some cases, almost that of light itself, the fastest velocity known" [2].

This relationship struck me, and I considered that it was worth while bringing under your notice.

Here I must interpolate a kind of personal explanation. I wrote this paper in time to read it to the Liverpool Branch of this Society on December 8. It is, therefore, peculiarly gratifying, to me to have brought under my notice a few days ago some authoritative evidence in support of this relationship which I deduced, namely that, "activity of movement bears an inverse ratio to size."

At a meeting of the New York Academy of Medicine, an orthodox body, on December 7, Dr. Jerome Alexander and Dr. Jesse Bullowa, made the following statements as the result of their experiments: "If one examined the suspension of any fine powder with the ordinary microscope, the individual particles exhibit a slight trembling motion known as the 'Brownian movement.'

"Although this movement is more marked in the case of smaller particles, it is not sufficient to keep them afloat, and they gradually sink out of solution.

"But with the ultramicroscope it has been demonstrated that with increasing fineness of sub-division" (such as is obtained with the ordinary homœopathic trituration, Ed.), "the motion of the sub-divided particles continues to increase in speed and amplitude, until it becomes so vigorous and extensive that the particles no longer settle, but remain permanently afloat, that is, they have what is now termed a colloidal solution. If the sub-division is proceeded with still further, they gradually pass into the sphere of true or crystalloidal solutions, wherein the infinitesimal particles of the dissolved (now thoroughly liberated or disintegrated) substances are reduced to molecular dimensions, or are even split up into 'ions.' These experiments should

be confirmed, 'for they are of the utmost importance to homœopathic pharmacy' [3].

As a comparison to this quotation, I want to call your attention to the following passages in my address as President of the Liverpool Branch, so long ago as October 8, 1903 !

"So the medical profession is deficient in sense in denying the law of similars, because there is as yet no explanation of its method of action. All academical discussions as to its method are interesting, but quite unnecessary for its adoption, as a law deduced, like gravitation, from innumerable manifestations of its action, and this law would have been accepted and acted upon, as is gravitation, by all, had the consequences of its neglect been as personal and as disastrous as would be the rejection of gravitation.

"A most interesting question as to the method of action of drugs has been opened up by the discovery by M. and Mme. Curie, of the activity possessed by radium and other substances, and which is in the nature of ray emanations. This radio-activity is already known to be widely diffused, and has been found in small degree in most metals and many other substances, even traces of it in common water from deep wells ; and it is reasonable to infer that this may even be part at least of the explanation of drug action on the body cells, and that such action of the drug atoms may be rendered more vigorous by the special treatment of trituration or solution to which our drugs are subjected, breaking down the masses of the drug molecules or atoms, and thus in some way liberating more of this radio-active power.

"And in that the power of action of our medicines is often questioned, because the mass of the drug employed is imponderable, it is interesting to note the following from Sir Oliver Lodge, on the emanations of the active rays from radium : 'The solid deposit left behind by the radium emanation can be dissolved off by suitable reagents, and can then be precipitated or evaporated to dryness, and treated in other chemical ways, although nothing is visible or weighable or detectable by any known means except the means of radio-activity.'

"As the law of gravitation shows the essential direction taken by falling bodies, and demonstrates a force to which everything is subject, though it may be nullified for a time by some counter-force, so the Law of Similars shows the pervading force of drug action, though it may not be always demonstrable because of other overpowering forces which disguise or overwhelm its action.

"And, further, let us beware of error through not calmly reasoning out whatever of those opposing forces may be recognizable, and which we at first would look upon as contradicting the universality of this central law" [9].

"So medical men should learn the lesson that because they can point to some process in the body which seems in opposition to the Law of Similars in regard to the action of drugs, such process is not a denial of the law. Had they the knowledge and reason necessary they would find that it was the opposition of some other force, or a similarly paradoxical manifestation of this force, and that when the excessive action in other directions had been nullified, the ever present Law of Similars would then be demonstrable, acting harmoniously in the equilibrium thus established" [9].

I do not ask your pardon for introducing such a long quotation from one of my own publications written over ten years ago. I have done it for my own gratification. Then, as even earlier, I was charged with unromantic—even iconoclastic—thought and criticism. Personally I call it "thinking upon the bed-rock plane of pure 'rationalism.'" It is therefore soothing to my ruffled feelings to find that although increasing knowledge enables me to push further than I was able to do at the earlier date, my principle of action is so far justified that the laying out of the line of thought in any direction partakes of the nature of a surveyor's lines, figures, and tangents and co-tangents of angles, it at any rate ensures that progress shall only take place in the direction of truth. As my object is to bring my paper up to the latest possible date, I must allude shortly to recent drug preparations. •

"The whole question of the therapeutic value of any drug centres around its behaviour or character in solution. This matter of solution is one of the greatest importance and well repays study by those who desire to place treatment on a scientific plane with regard to definite relationship between posology and effect.

"Solution is of two kinds : 'Crystalloid' or true solution and 'colloid' solution : A solution of tannic acid in alcohol is bright, clear, and a true solution in the chemical sense. An aqueous solution of tannic acid, although it has no deposit, is not clear, and presents a very different appearance. In a true solution each molecule of the substance dissolved is free to move about the molecules of the solvent. In a colloid solution, groups, systems, or configurations of the molecules of the substance dissolved exist, and function as a single molecule, giving rise not only to different physical and chemical characteristics, but to different therapeutic action.

"Colloidal bodies have been known for some time, and have been in use in almost every other way than by the mouth. The advantage of silver albumin compounds, which are colloidal, over ordinary silver nitrate are well known, but it is only recently that serious attention has been given to colloidal forms of drugs for internal use. A large number of colloidal preparations are less toxic and more active than true solutions, and admit of a much less dose" [10].

The diagram which I have copied from this source helps to form a clearer conception of these "solutions." This statement of the case may explain the greater activity, and therefore "toxicity" of true solutions with their free molecules, atoms or even "ions"; as also it may explain how a colloidal preparation may permit of more of a given drug being introduced into the body because some of the natural activity of each drug-molecule is already expended in the necessary "mutual bonds" which hold them into "groups." The subject bears great interest as to the "form in which the drug material is presented to the body cells," but it does not affect

the "selection by the law of similars of which drug should be so presented."

Of interest also to us as homœopaths are the small illustrations which I have cut from another proprietary publication and affixed to the previous diagram [11]. They show the remarkable activity of our preparations, and the photographic proofs of the power of the quantity of drug even when triturated to the 60x, are a perfect warranty that in all of our preparations there is an equal amount of the original drug, the only one difference being that in this case of "radium" even this trace possesses activities in a physical direction which render its own evidence for its presence irrefutable. In most other cases the evidence can only be clinical or curative, and so can be denied by the scoffer. At any rate, in this case we can convict the scoffer of "wilful perjury," a fact upon which I congratulate myself and you.

Now, all "molecular" structure being in a state of "perpetual motion," all "molecular activities" must be the resultant of these inherent motions. "Life" therefore is, in each cell, the result of atomic and molecular motions, and in the human body, the result of every "cellular result" added together and averaged. So long as the motions are "rhythmic" and regular, functions are normal and health persists. "Symptoms," whether what we call "idiopathic," which simply means that we have disarranged normal cell activities but do not know how we did it, or whether they are caused by the "reasoned" poisoning of cell pabulum, as in drug proving, consist simply of our added irregularities, which disturb nature's normal "rhythm." Now we have already seen that in nature's own "rhythmical vibrations" *similar vibrations cancel one another*. This is the entire basis of "spectrum analysis." Might I suggest that *similar super-added disturbing vibrations also cancel one another*.

The added "irregular disturbances" are cancelled by the presentation of "further added irregularities so selected that their periods of irregularity coincide."

This is the explanation which I have crystallized out from the mixed solution I have gathered in my brain as the result of readings on "New Knowledge."

These normal "molecular activities," even when of the high organic complexity, will stand severe tests, not so much as "perversions," but as accelerations or retardations of the normal vibrations, apart from the former mentioned "irregularities."

You will remember that "rest" only came at "absolute zero," and, of course, "life" would be extinguished earlier, but resistance is wonderful. Here is an instance: "Many algæ and even the mosses themselves continued life when they had suddenly stopped active living with the onrush of the winter frost. They had remained dormant during several winter months, and now active life suddenly began again. Innumerable wheel animalcules (Rotifera) and water-bears (Tardigrada) once more began to move and live, and in one case a small nematode worm that had evidently been on the point of laying her eggs when overtaken by the frost months previously, began to lay them as soon as it had melted out and continued her life as if nothing had happened during this long period of sleep. The researches of Mr. James Murray in the Antarctic Regions have since demonstrated the same phenomena and he has further demonstrated that the Antarctic Rotifers, after being frozen and melted, and then dried, can be subjected to the temperature of boiling water for a short time and yet continue to live" [7].

These tests are more of the nature of a "natural mechanical break on rhythmical activities." We are concerned, not with true mechanical influences, but with "disturbing factors" attempting to upset nature's "rhythm, and while nature cancels "regular with regular," we treat "each irregularity with its own irregularity."

Vaccination and serum-therapy are recognized by Sir A. Wright to be Homœopathy. The former produces a diseased condition with symptoms similar to the disease; it is desired to either prevent or cure, and its preventive action is similar to

that attained by a previous attack of the disease, so modifying the pabulum in the blood, that the specific disease poison is impotent for future damage.

Antitoxin treatment is not homœopathic ; but it provides the patient with an artificial supply of that antidote to the poison, which in many cases the cells themselves are unable to manufacture either with sufficient rapidity, or in sufficient quantity. No doubt this assistance of natural efforts is better than the previous treatment by so-called "orthodox" medicine. Still our scientific treatment, owing to its proved experimental basis, is far more efficacious than the antitoxin treatment. The *Medical Century* of New York, in August, 1912, published statistics proving that while the death-rate in diphtheria under allopathic treatment with antitoxin had fallen to 16·1 per cent., the death-rate under Homœopathy without antitoxin was only 3·8 per cent.

Homœopathy has long used a "toxin" treatment which far surpasses this antitoxin, and I believe it has been more successful just because the medicinal preparation used is not only an "antitoxin" but contains the actual "toxin" itself. As far back as 1835, Dr. Pierre Dufresne, in the fifth volume, "*Bibliothèque Homœopathique de Geneve*," reported cures of "malignant pustule" by "anthracinum," and cures have been repeatedly effected since that date.

Our tuberculin ante-dated, and is superior to the more modern preparation. Our syphilinum has been potent for good, while the "orthodox" profession muddled along with poisonous doses of mercury and potassium iodide.

Organotherapy, or treatment with a supply of the substance or secretion of some definite organ which is known to be defective and the deficit in whose secretion is responsible for the disease present, has produced marvellous results, and should be welcomed as warmly, and used as conscientiously, by homœopaths, as by allopaths.

Thyroid extract is invaluable in all manifestations of morbid conditions due to deficiency of normal thyroid secretion, as

goitre and myxœdema, but it is harmful in cases of excessive secretion ; as exophthalmic goitre.

Pancreatin should be used in diabetes. Ovarian and testicular extracts in failure of these organs, adrenalin in deficient blood pressure, and pituitary extract in acromegaly.

Even in this department homœopathy may be congratulated, as our provings of drugs show that the symptoms produced simulate the diseased conditions caused by failure of these internal secretions. This can be seen by the provings of iodine, the symptoms of which very fairly represent those produced by the failure of the natural secretion of the thyroid gland.

The extremely gratifying success of ionic medication of the thyroid with ions of iodine driven directly into the cells of the gland by means of an electric current is, in my opinion, due to the more direct and intimate effect of the minute total dose of iodine applied directly to the actual seat of its deficiency.

Even in the application of the X-rays, the homœopathic law is triumphantly vindicated. This is well shown by Dr. J. P. Sutherland [6] when he gives the recognized damages and uses of these rays in parallel columns.

I need only refer you to the paper he communicated to the International Congress in London in 1911, where you will find the uses given for erythema, psoriasis, erysipelas, dermatitis, herpes zoster, pruritus, pemphigus, acne, neuralgia, squamous epithelioma, &c., which might be taken as a record of the involuntary provings of experimenters in this treatment.

From this incomplete collection of examples, I consider that homœopaths have every reason to be proud of their science. The New Knowledge has terrors for the old medical system, but the foundation of homœopathy is not only unshaken, but it is strengthened. Each advance of the New Knowledge but confirms our therapeutics. It stands to-day stronger than ever it did. Each new witness testifies to its science and truth. Each new fact but endorses its claims. The New Knowledge partially explains the "how" and the "why" our law applies,

and each progressive explanation but shows that as the laws of life are discovered, they tend to *confirm it*. As, after the discovery of "gravitation," extension of astronomy and physics witnessed to its truth—so new discoveries in the laws of life and health show that while prevention or relief of disease can be accomplished by hygiene and the making up of deficiencies of natural secretions, still in the field of therapeutics the highest law yet discovered is that which was inductively discovered by Hahnemann, and proved experimentally by him, and by his followers, the law by which we ourselves stand to-day—

"*Similia Similibus Curentur.*"

The British Homœopathic Journal, March, 1914.

EDITOR'S NOTES.

The Treatment of Leprosy by Chaulmoogra Oil.

We commented in the *Lancet* of September 27th, 1913, on two cases of apparent cure of leprosy by injections of chaulmoogra oil combined with camphor and resorcin given hypodermically. These cases were reported by Dr. Victor G. Heiser, from the San Lazaro Leper Hospital, Manila. It was then stated that there were in the same hospital at the time of writing "a number of other cases" under treatment which had for varying periods presented only negative evidence as regards leprosy, though all of them exhibited typical lesions when the treatment with chaulmoogra oil was begun. Dr. Heiser now reports the discharge of two of these cases after having been free from leprosy for two years. In the first two cases reported the conclusions to be drawn were somewhat obscured by the fact that immediately on their admission to hospital both patients received vaccine treatment, so that it was impossible to determine what share, if any, this may have had on the subsequent improvement. The present cases, however, received no vaccine treatment. As in the former instance, both cases were mild. In both there were typical leprous macules and the diagnosis was confirmed by microscopical examination. The first patient began treatment with chaulmoogra oil by the mouth, in 10-drop doses three times a day, on January 7th, 1911, but owing to gastric intolerance weekly hypodermic injections of the chaulmoogra oil, camphor, and resorcin formula were substituted on Feb. 15th. The dose began with 1 c.c. and was increased gradually to 10 c.c. by April 20th, when it was gradually decreased to 1 c.c., to be again gradually augmented to the maximum dose. Treatment was discontinued from Oct. 15th, 1911, when examinations of the patient proved microscopically negative, to Jan. 7th, 1915. Then it was recommenced, raised to the maximum, and again decreased. On Oct. 30th, 1913, microscopical evidence of the disease having been absent for two years and there being no clinical evidence of the disease then existing, the patient was discharged on proba-

tion as apparently cured. The other case was similar. The treatment by injection was begun on May 4th, 1911, the maximum dose of the injection reached, however, being only 5 c.c. as attempts at larger doses caused severe palpitations and præcordial distress. the macules began to improve a few weeks after treatment was begun, and had entirely disappeared by August 25th, 1911, since which time all examinations have proved microscopically negative. This patient was discharged on probation on Nov. 4th, 1913, being apparently free from all signs of the disease. These two further cases materially strengthen the argument against the cases being instances of the unaccountable spontaneous disappearance of the disease that does undoubtedly occur at times. As we understand that there are still other cases under treatment increasing interest will be evinced in this cumulative evidence of its value.—The *Lancet*, March 7, 1914.

Greek and Roman Medicine.

The present year has seen already the issue of two works in the English tongue dealing with the history of medicine—the one a survey of the whole subject, from the pen of Dr. Fielding Garrison, principal assistant librarian of the Surgeon-General's Office, Washington, a monumental work; and the other a small book dealing only with Greek and Roman medicine, by Dr. James Sands Elliott, of Wellington, New Zealand. To give a full account of medicine during even this comparatively short period of history (say, 2000 years) would entail the writing of a large work, and Dr. Elliott has wisely attempted only a sketch of the subject. By an inversion of history, of which he is fully aware, he begins with early Roman medicine and then goes back to Greek medicine, of which he gives an account down to the time of Serapion, of Alexandria, circa 280 B. C. The course of Roman medicine is then resumed and continued as far as a practitioner of the sixth century A. D.—namely, Paulus Aegineta, who was the last important member of the great school of Alexandria. If we may judge by most

extant literature on the subject the art of medicine and its practitioners were not held in high estimation in Rome. Medical men were nearly all foreigners and mainly Greeks, hence the abuse which Cato and the elder Pliny poured upon them. It must be allowed that in many cases the medical man was very ignorant and illiterate, and that often the line between the quack and the trained practitioner was very narrow. But the coarse insinuations of Martial, Juvenal and Petronius against the profession are probably no more true pictures of it as a body than the diatribes which used to appear in the political press about medical men in the early days of the Insurance Act. Seneca, in his treatise "*De Beneficiis*," writes with real good feeling of the medical man, and practitioners like the Stertini enjoyed the confidence of the Cæsars and made enormous fortunes, though, of course, this latter fact does not necessarily mean that they were able practitioners, for quacks made as much or even more money than educated physicians in the hey-day of Roman luxury. In his account of early Roman medicine Dr. Elliott speaks of Livy as saying that Numa Pompilius was struck by lightning and killed as the result of experiments in physical science, and that these experiments have been conjectured by some to have been electrical. This is an error; it was Tullus Hostilius and not Numa whom Livy describes (apparently on the authority of L. Piso) as being killed by lightning, and the "experiments" were religious conjurations which he was trying to perform after a formula left behind by Numa for bringing down lightning from heaven. Rain bringers or lightning bringers are found among savage medicine men to-day, add the story of Numa, together with those of Salmonius and Remulus Silvius, the last two of whom were killed in the same way as Tullus, are evidently traditions of this kind of magic. It is not a wholly impossible point of view to suggest that these stories arose from there having been some daring investigator in primitive times who tried something analogous to Franklin's well-known experiment on atmospheric electricity with the kite. One of Franklin's followers tried the same experiment and was killed. The Etruscans studied light-

ning with assiduity, and Numa, who was a Sabine, was traditionally learned in natural philosophy ; so he may have succeeded where others failed. This, however, is speculation, whereas Dr. Elliott, in his interesting little work, has collected many facts of value to the medical historian.—*The Lancet*, March 7, 1914.

Heroin the New Peril.

Our beloved Uncle Sam, through his efficient Department of Agriculture, sends us "released" copy under the heading, "Use of Heroin Spreading Rapidly Among Drug Fiends." Heroin is the proprietary name for a derivation of morphine chemically known as "diacetyl morphine." It has the disadvantage (or advantage, if you are of a cynical turn) of killing its users if they take an overdose, and is "far more dangerous for drug users than morphine or cocaine." Since the laws against the use of other things have been enforced, the sale of this dangerous drug has enormously increased ; in one city the coroner having found five deaths from heroin. These are the bald official facts, but back of them stands another fact, older than the Sphinx, but apparently unknown to-day, namely, that you cannot reform humanity by legislation. Every time something is prohibited something worse takes its place, for the *desire* for the devilish remains in humanity, and if stopped in one direction it will break forth in another, and it is at the bottom of all our woes. This view is not popular with the earnest men and women who swarm at our State Capitols advocating almost as many reform measures as there are lobbyists, from V. for W. to anti-vivisection, from inspecting school children to establishing a medical hierarchy, but it remains a grim old fact just the same. The old way was to punish the sinner against the common good. The modern way seems to be to reform him by an Act of Legislature.—*The Homœopathic Recorder*, January 15, 1914.

CLINICAL RECORD.

TWO CASES OF CHRONIC ECZEMA CURED BY INJECTIONS OF ISOTONIC SEA-WATER.

BY ARTHUR G. SANDBERG, M. D.

The following two cases may prove interesting on account of the length of time that the disease had existed, and also from the different treatments that had been adopted.

(1) Mrs. R. A., æt 69, a lady residing in Surrey, consulted me on June 11th, 1913.

She had been suffering from Eczema for about twelve years, affecting the chest, neck, the flexures of both elbows, and the inside of the left thigh. During the whole time that she had been troubled there were also frequent outbreaks of large boils ; sometimes on the back of the neck, and sometimes on the arms or the thighs.

With the exception of the eczema, the patient had usually enjoyed good health, but for the last five years, owing to the distress occasioned by this affection, her condition generally had greatly deteriorated. There was much pruritus and insomnia, anorexia, and constipation.

Throughout her illness Mrs. A. had had a good many different kinds of treatment : allopathic, homœopathic and hydropathic. Latterly she had undergone ionic medication for about twelve months.

An injection of sea-water plasma of 20 cc. was ordered ; this to be repeated in two days, and continued in gradually increasing doses, every two or three days, up to 50 c.c.

On July 8th, after ten injections, the patient was much improved, and this improvement kept steadily on until the last injection of 50 cc. on August 22nd, when she reported herself as quite cured.

When seen on December 18th, Mrs. A. was keeping quite free from eczema, and there had been no return of any of the

painful crops of boils. She had greatly improved in strength, the appetite was good, and the constipation and insomnia had both disappeared.

(2) Mrs. J. B., æt 53, consulted me in July, 1912, for eczema of over twenty years standing.

The eruption was chiefly on the back of the neck, the shoulders, chest, and both arms; it was intensely red, very irritable, and often moist. General and local treatment of various kinds had quite failed to relieve. In all other respects the patient was in fair health.

The treatment adopted was two injections of Isotonic seawater, of 30 cc. weekly, for a fortnight, when the amount was increased to 50 cc. These doses were continued until the end of August, when the patient was nearly convalescent; by October 1st she was quite well.

Mrs. J. B., continued free from any signs of eczema until June, 1913, when there was a very slight outbreak, which quickly subsided after six injections of 30 cc.; since then there has been no return of the disease.—*The Homeopathic World*, March 2, 1914.

Cleanings from Contemporary Literature.

MERCURIAL POISONING AND ITS PREVENTION.

BY EDWIN NORMAN CHANEY, M. D.

During the past year I treated several cases of mercurial poisoning. As they contain data not found in general medical literature, their history may be of some interest.

All are more or less acquainted with the ordinary symptoms resulting from the action of mercury on the tissues; salivation, stomatitis, gastro-intestinal and renal disturbances, ulceration of the gums, loosening of the teeth, necrosis of the bony tissues, diarrhœa, dysentery, and tenesmus of the sphincters, anemia, emaciation, and a deficient power of assimilation in the skin, hair and nails; the loss of vital force of nerve tissues, resulting in trembling, hysteria, hemiplegia, and neuralgia of the trigeminus nerves, while glands surrounding the tongue, neck and even those throughout the body become swollen and inflamed.

Several cases under observation were suffering with nervous prostration. They had been severely drugged for many years, but during the past five years have been relieved of most of the drug symptoms by the use of minor official work assisted by the homœopathic remedies.

In one case the first three years of treatment were devoted to this eliminating process. For the past two years Mercury, Carbolic acid, and Opium were about the only drug symptoms remaining.

Last winter she had a severe neuralgia of the left side of the face, and although *Mercurius vivus* c.m. would relieve for a few hours to a few days, the pains would recur about every two weeks. The persistency of these symptoms prompted me to inspect the teeth. Upon examination I found a red rubber plate and eighteen amalgam fillings, and advised their removal, which she immediately set out to accomplish, and gold or porcelain took their place. She soon realized great relief in the neuralgia and a decreasing in size of the mesenteric glands in her abdomen.

These glands had a habitual tendency to swell up every few months and empty themselves by pouring out an acrid secretion into the bowels. This greatly irritated the ulcers of the colon and rectum and caused them to bleed, and at times the urethra was similarly affected, and every few weeks red swellings would

appear in different parts of the body, accompanied by severe itching.

These periodical mercurial expressions, which had been occurring so many years, I had attributed to the Calomel taken in past years of her life, but when I saw the amalgam fillings in her teeth and the plate, it satisfied me that they were the cause of the persistent mercurial poisoning. This revelation caused me to reflect as to several other patients that had been periodically presenting mercurial symptoms.

An elderly lady had been experiencing much trouble with swollen glands in the abdomen, prolapsus of the bladder through the vagina, an ulcerated urethra and rectum, with prolapsed piles, also inflammation of the frontal and ethmoidal bones, zygomatic process, eustachian tube, and the middle ear; these conditions had existed for many years. Inspection of her mouth revealed an upper and lower plate of red rubber. She was advised to remove the plate from the mouth as much as possible, until she could consult a certain dentist who is making a speciality of aluminum plates alloyed with 10 per cent. of gold to take the place of the of the rubber. This was accomplished, and soon there was an amelioration of the symptoms.

In a great many patients I have found that the mercurial fillings and plates were the cause of serious symptoms, such as chronic congestion and ulceration of the stomach, intestines, kidneys, liver, pancreatic glands about the generative organs. The sepsis resulting therefrom in a few cases gravitated down the lymphatics and caused a suppuration around the toes. But let me say that some of those toes that were thought to be healed by using local applications of zinc and lead ointment were cases of suppression, the discharge being forced up again into the abdomen and producing abscesses in the colon, which condition was cured by the indicated remedy, Apis in the 30th and c. m. potencies, but not until the pus again came out at the toes.

My experience has taught me that mercurial poisoning disintegrates the bony tissues as well as the muscular, membranous, and nerve tissues, as I have observed in so many cases of pyorrhœa that were relieved after removing the mercurial compositions from the mouth.

At times we may detect mercurial activity by its ulcerating propensities in preparing the tissues into receptive soil to give existence to malaria, psora, gonorrhœa and syphilitic diseases. .

I believe in many instances psoric tendencies never would have terminated in tubercular or cancerous conditions if there had been no Mercury used in the mouth. Neither would some cases of gonorrhœa have terminated in secondary or tertiary syphilis if there had been no rubber plates or amalgam fillings used for the teeth.

On the other hand, introducing mercury into the system, even in small quantities, will sometimes partially suppress the vital forces of the tissues with which it comes in contact and prevent an expression of other diseases such as tuberculosis, syphilis, etc., but ultimately the patient succumbs to the mercurial poisoning.

Several interesting cases were reported in the last July number of *The Medical Advance*, one of iritis with adhesions caused by mercurial fillings in the teeth. Another patient had been mercurialized, and twenty-three physicians had mistaken the malady for syphilis and wanted to give more Mercury, which he refused, believing he had never been exposed to syphilis, but knew he was poisoned with Mercury.

Several cases of mercurial poisoning were recorded in the *Clinique*, of Hahnemann, Chicago, February, 1913. One case of swollen cervical glands, others of piles, fistula, gastralgia and cancer of breast, all being relieved greatly after the removal of the Mercury from the mouth.

While treating ulcers of the bowels with the speculum and peroxide of hydrogen applications I have observed that the rectal and sigmoidal ulcers would become almost healed, when one of the periodical attacks of congestions from Mercury would take place for a few days and cause a relapse of the ulceration of the affected parts.

The cure of mercurial poisoning may be accomplished by first removing the offending metal and then giving the indicated anti-mercurial homœopathic remedy in the high potencies, especially those of the mercurial order.

Mercurius corrosivus. Excessive burning inside or outside of the body. Great tenesmus of the bladder and rectum ; diarrhœa.

Mercurius dulcis. Inflammation of the ear : catarrh of the eustachian tube.

Mercurius solubilis. Glands are swollen under the tongue and through the abdomen.

Mercurius vivus. Gums bleed easily, raw, sore and burn. Prostration. Fetid odor from mouth; coppery taste. Night sweats. Rheumatism.

Mercurius iodatus ruber. Inflamed tonsils, involves but one side, and at times extends down into the lungs; left side worse.

Mercurius cyanatus. Membranous croup; prostration; raw, sore throat in speakers.

Mercurius iodatus flavus. Enlarged cervical glands; sore throat, worse right side. Liver swollen, painful, yellow tongue, yellow leucorrhœa.

Of course, salivation, profuse perspiration which does not relieve the symptoms and aggravation from heat or cold, belong to all of the Mercuries.

Then there is a long list of anti-mercurial remedies indicated among the potencies of the plant, animal and mineral preparations, such as Nitric acid, Nux vomica, Pulsatilla, Lachesis, Aurum metallicum, etc.

Ignorance on the part of physicians and dentists concerning the action of Mercury on the system is going to be no small obstacle to our efforts in relieving humanity from the destructive influence of Mercury. Dentists as a rule claim that there is nothing harmful with the Mercury as they use it, and will not consent even to remove the fillings. A few dentists, however, have been brought into close experience with such cases as are presented in this paper, and are glad to discard the amalgam fillings and refuse to use the rubber plates.

One of the most successful methods I have employed to convince intellectual patients that Mercury seriously embarrasses our economy when used in dentistry is this: Show them colored plates of the anatomy; point out the cervical, axillary, mammary and inguinal glands and their chainlike connections with each other and the branches extending into the extremities; explain their power of absorption, and ability to enlarge to the size of hen's eggs until they are capable of retaining several quarts in all; that one of their functions is to absorb irritating products, such as acids coming from excessive eating of fruit, or Mercury and other drugs, septic matter coming from septic diseases or zymotic ailments; or even such drugs as Iodine, Quinine, Borax, etc., when used as local applications.

The glands will in ordinary health retain these accumulations for years ; and in order to protect the muscular and vital tissues will allow only a small quantity to exude into the circulation slowly every few days. The poisonous fluids make their exit from the blood circulatory system through the perspiratory organs and the mucous membrane of the mouth, colon, rectum, kidneys and vagina.

If the vasomotor nerves are prostrated through their terminal irritation, the circulation of the glands will be dormant. This will cause the glands to empty too slowly, thus threatening the life forces with an overcharge of sepsis sooner or later. For this reason we should find the sympathetic nerve terminals that are impinged or ulcerated in the membranes covering the sphincter muscles of the colon and lower orifices, and relieve them of the existing pathology.

It is said that the United States Government is now making a national crusade through the Department of Commerce on a list of industrial poisonings, among which is Mercury. The following is a quotation from a recent current magazine:

"Most deadly of all modern occupations is the manufacture of mercurial preparations, such as silvoring mirrors, making thermometers, preparations of bronze and gilding liquids and certain medicinal tablets. Two or three years may pass without any signs of trouble, when the workman becomes aware of a soreness of his mouth and gums, and pretty soon after that his teeth begin to bother him acutely, which is one of the signs that disease has fastened upon him. The last call to escape from fatal consequences comes through the hands, which quiver and tremble spasmodically at times. The man who persistently slights that warning soon becomes marked for death."

If touching Mercury with hand absorbs a sufficient quantity to poison the system, how much more easily the Mercury must be introduced into one's economy by a small filling in a tooth. Here the Mercury is made soluble by the saline saliva, and more so if gold metal also exists in the mouth. In such a case the Mercury will in turn make gold soluble, and where mercurial perspiration comes in contact with gold rings on the fingers, or gold beads around the neck, there you will often find a blackening of the skin, and at the same time the patient is thus subject to the poisoning effects of gold.—*The Medical Advance*, February, 1913.

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RECENT EXPERIMENTS IN THE FIELD OF
HOMŒOPATHY.

BY CHARLES E. WHEELER, M.D., B.S., B.Sc. LOND.

Homœopathy is founded on experiment and supported by continual experiments. These experiments are nearly all clinical, and the clinical test in therapeutics must be the final test. It is of no avail to bring forward laboratory or other evidence unless when the clinical test is applied it confirms the theory on which it is based. Therefore followers of Hahnemann have rightly never ceased to urge that the need is for more and more direct applications of the law of similars to actual cases until out of the multitude of competent experiments a fair conviction can be built up. However, for various reasons any extended experiments have been denied to us. We make converts out of individual experimenters but affect the mass of the profession little, if at all, at any rate directly. Now it is conceivable (though to the mind that has studied history not perhaps very profitable) that to bring forward non-clinical evidence pointing towards Hahnemann's conclusions might influence more men to go on to the clinical and final tests. Whether this result follow or no, it is obviously desirable that such evidence should be forthcoming if possible, and to such ends our rather scanty

resources for research should be mainly devoted. To-night I propose to describe a few experiments constituting part of a year's work for the Beit Research Fund of the British Homœopathic Association, supplementing my paper with an account of some recent American work of value. Our American colleagues are rapidly awaking to a realization of the possibilities of research and with their greater facilities have greater opportunities. We shall all profit by their use of them.

My account to-night is of two quite different investigations; one concerned with the possible mode of action of the law of similars, the other with the possibility of demonstrating activity in the higher drug potencies. They are grouped together here for the convenience of reporting to the Society, but offer quite distinct fields for discussion. I will begin with the experiments on the mode of action of the law.

As the science of bacteriology has developed it has brought us some knowledge of the phenomena of bodily resistance to bacteria, and we can speak of lysins, opsonins, agglutinins and so forth with some precision, and to some extent measure their effects. These are of the nature of generalized body defences. Homœopaths have believed, on clinical grounds, for many years that remedies chosen on the basis of similarity of symptoms between disease and drug have power to aid recovery and ward off defeat. The clinical evidence is strong. Is there any means of investigating the mode of action of drug assistance? We can conceive of drugs giving aid in one of two ways. Do they definitely encourage the specific resistance? Vaccines are designed to this end; do our drugs act as vaccines do, or do they act not upon the mechanism of general resistance but upon the cells principally affected in the struggle, possibly stimulating them better to endure till such time as the natural mechanism of defence is sufficiently elaborated? The general methods of hygiene and nursing, and presumably the orthodox "tonics" and symptomatic treatment, aim, I take it, rather at keeping up the health of the unattacked parts of the organism, and are not designed specifically to aid either general or local resistance.

But the *similimum* (if it deserves the name) almost certainly goes to the cells most affected, and there by the biological laws of protoplasm can readily be held to afford a stimulus that may be of value. This aid in all probability we *can* give, and it is much to be able to give it. Can we give more? Can our drugs increase specific resistance substances as vaccines do? Resistance substances can to some extent be measured, but the fact that their production is increased in a case of disease is obviously no tribute to any drug that may be given. It is a natural process, and if the drug *does* aid we cannot disentangle its share in the laboratory. The question is: Can our drugs affect the healthy in the direction of increasing resistance bodies? This matter is more susceptible of experiment, and a certain amount has been done. With the opsonic index for instance (where we may take some little pride that this Society was very early, if not first, in the field) experiments have shown that specific resistance to tubercle is raised by *Phosphorus*, to pneumococcus by *Feratum viride*, and to *Staphylococcus pyogenes* by *Hepar Sulph.*, and I believe *Echinacea*. But, although, for my own part, I believe that opsonic indices can be found that have a value, many men doubt our ability to determine them with enough accuracy, and therefore another line of research appears desirable. A few months ago, I saw a statement in an American journal that Dr. Mellon, of Ann Arbor, had found that *Baptisia* given to the healthy produced increased agglutinating power of the blood to *Bacillus typhosus*. I suggested to a few colleagues that we might make some experiments, and these were duly undertaken. I had then no knowledge of Dr. Mellon's methods of experiments. I will now quote my report to the Beit Research Committee.

REPORT ON EXPERIMENTS ATTEMPTING TO DEMONSTRATE THE
POWER OF THE SIMILIMUM TO FAVOUR THE FORMATION
OF SPECIFIC ANTIBODIES.

A certain amount of evidence has been produced that remedies which are frequently indicated in certain pathological conditions have the power to favour the formation, of antibodies

specific for these conditions. Thus, phosphorus has been shown by Neatby and Wheeler to increase their opsonic index to tubercle, in America, observers have claimed to register a specific increase in the opsonic index to pneumococcus from the use of *Veratrum viride*, to germs of pus (*staphylococcus*) from the use of *Echinacea*, while *Hepar Sulph.* is said in large doses to lower the index to *staphylococcus*, and in small doses to raise it. All these experiments of course, have been made on healthy individuals. As, however, observations which claim to measure the opsonic index are regarded by many physicians as of doubtful value, it was thought desirable to enquire whether any evidence could be obtained of influence by drugs upon some other antibody, and learning that Dr. Mellon, U. S. A., had reported an increase in the agglutinating power of blood-serum to *Bacillus typhosus* in persons taking *Baptisia*, it was decided to repeat, and, if possible, extend his experiments.

Four persons took part in these experiments during March and April, three men and one woman. The ages of the men varied from 28 to 45, and the age of the woman was 45. As the susceptibility to enteric becomes much diminished as life proceeds, it was thought that possibly the specific powers of bodily resistance would be found to be more readily stimulated after the age of 40. On the other hand, it is manifestly desirable to test the drug on a healthy person of the age of 20 or thereabouts, but as no one was available of that age that experiment is deferred.

The experimenters took the drug in the various ways detailed below. The estimations of agglutinating power were all made at the Laboratories of Pathology and Public Health in New Cavendish Street, and were made without any previous knowledge of the nature and extent of the drug taking. The expenses of the experiments have been entirely borne by the Beit Research Fund of the British Homœopathic Association to whom our best thanks are due.

EXPERIMENTS.

Baptisia was taken in the mother tincture (at two drops to a dose): A. in single doses, and blood taken within two hours

(in case the effect should be fugitive) ; B. three times in twenty-four hours, and blood taken next day ; C. night and morning for three consecutive days, blood taken on the fourth day.

Experiments A. and B. were negative in result with all four experimenters. Experiment C. showed a definite result in the case of the lady prover and one of the younger men provers. Both of these showed a definite clumping of *B. typhosus* in a dilution of one in four, but not in any higher dilution. The results were negative in the two other provers.

It was now hoped to get better results by more prolonged taking of the drug, and it was planned for all provers to take *Baptisia* ϕ three times daily for a week. Unfortunately both the two provers who had shown some susceptibility were unable to carry the experiment through.

The lady prover developed symptoms (probably due to overdosing) which prevented her from continuing, and the man prover contracted a catarrh which was held to be a complicating factor. One of the other provers also, though showing no agglutinating increase of power, developed abdominal pains (probably due to the drug) which hampered him in his daily work, so he too, discontinued taking the drug. The fourth prover carried through his experiment, but the result was negative. Subsequently *Baptisia* in the 30th centesimal was taken both in single and in repeated doses by one of the susceptible provers (male) and one of the insusceptible, but no result of any kind was registered. Later, two new provers (both male) were persuaded to take *Baptisia* ϕ for three days, but their blood serum showed no change. All of the provers who took *Baptisia* experienced some drug effects. The lady prover developed sore throat and general pains, besides much mental unrest and discomfort. One male prover, as noted above, developed abdominal pain, of a character severe enough to cause real inconvenience (some diarrhœa), and all the provers experienced a deadening of their mental faculties, a marked disinclination for any exertion (especially mental exertion), a slowness of mental response, a sense of inertia, which bear out other provings of this drug.

One interesting result (apparently) of the drug was shown in three out of the four original provers while taking *Baptisia* ϕ , namely, an increase in the readiness with which the blood coagulated, so that all these three provers had great difficulty in obtaining specimens of blood for testing. The fourth prover was unaffected; of the three who showed this phenomenon, two were the provers who also showed a slight increase of agglutinating power.

Besides *Baptisia*, three provers (all male) took *Rhus tox* ϕ for several days, but did not succeed in obtaining any effect that could be demonstrated. One prover, took *Arsenic alb.* 3x. for three days, and later *Arsenicum* 30 for three days (twice daily in each instance), but, failed to affect his blood.

Two other experiments were made (as the opportunity offered itself) with *Aspirin*, because of the recorded success of this remedy in pneumonia. Two male provers took each one dose of 15 gr. of *Aspirin* and the opsonic index of their blood serum to pneumococcus was estimated before the dose, three hours later, and twenty-four hours later. It did not, however, show any marked change. In one case it stood at 1.5 before the dose, in the other at 1.3. The first case showed a drop three hours after the dose to 1.2, and twenty-four hours later the figure was still at that level (1.2). The second case showed a drop in three hours to 1.1, and after twenty-four hours the level of 1.3 was reached again. The differences are interesting, but too small to be of much weight.

Comment on the Experiments.

The result of these experiments may best be described as tantalizing. Had no result of the kind sought for followed there would at least have been a certain finality in the matter. It must always be remembered that it is quite possible for a drug to be of value in a disease condition (as *Baptisia* often is in enteric) in more ways than one. It may stimulate the specific antibody mechanism, and in was for evidence of this action that we were seeking, but it may also act as a local stimulus to the tissues upon which the brunt of the battle is falling, and by aiding them

enable them to hold on successfully till the machinery of defence against the bacteria is elaborated. In the latter case the drug might be a real help, but would not increase antibodies specifically. Further, it must be borne in mind that specific agglutinins to *bacillus typhosus* are not present in normal blood. Therefore the provers were attempting to evoke a dormant process, not, as with opsonin content, accelerate a process already existing. When invasion by the germ has started the specific defence *Baptisia* may be able to accelerate it, and yet not have the power to bring it into activity alone. Perhaps it is fairest to suggest that this last possibility is the most plausible explanation of the experiments, because two provers *did* definitely show the beginnings of a specific response. They only showed it when they had taken so much of the drug that they were unable to go further, and therefore this initial success, the only positive result, remains, as has been said, tantalizing. Possibly at a future date it might be possible to repeat the experiments with these provers. Further, even this small success (confirming Dr. Mellon) makes the need for experiments urgent; for in homœopathic practice nothing is more true than that each case is an individual special case, and generalizations are doomed to disappointment. No homœopathic physician would expect *Baptisia* to have an identical effect on *all* provers, and further experiment might readily happen to hit on persons more susceptible than any hitherto tried. Particularly it is desirable to work with one or two younger provers of 18, 20, or 25 years. If these first experiments lead to others they will have served a useful end.

Did these experiments stand alone they would still, I think, be worth recording. But I can now lay before you a summary of Dr. Mellon's original experiments which are much more definite.

There were two provers: their blood sera were tested three times in one week, before drug-taking was begun, to make sure that they had no natural agglutinating power. Serum dilutions 1 in 5, 1 in 8, 1 in 12 were used. These results were satisfactorily all negative. The drug *Baptisia* was taken, 1 dr. 3x.

t.d.s. for a one week, the 1 drin. 2x t.d.s. for a week, then 1x t.d.s. for a week, then 1 drin, ϕ t.d.s. for two weeks. At the end of the first week (3x t.d.s.), there was very slight reaction in both with a dilution of 1 in 8. After the week of 2x t.d.s., 1 prover showed this reaction which 1 in 8 rather better, the other prover showing nothing, but after five days of the 1x t.d.s. both provers showed agglutination in dilutions 1 in 8, 1 in 10, 1 in 12. After a week of the ϕ both provers carried agglutination up to 1 in 16. Persistence in the drug thereafter showed no increased production of resistance bodies; on the contrary, the agglutination power gradually disappeared. But five days after the cessation of drug taking the power to some extent (1 in 8, 1 in 10) reappeared. Hecktoen of Chicago, in 1910, demonstrated that specific antibody curves sometimes reach their zenith five to ten days after the cessation of the stimulating antigen, a point of great interest in regard to the giving of unit doses.

These experiments are obviously of deep interest and importance to this Society. Comparing Dr. Mellon's result with ours, it is probable that our inferior results were due to a much lower dosage and possible (though no ages are given) Dr. Mellon's provers were younger. I am inclined to think that age may be a definite factor in obtaining results. The practical applications of these experiments I will leave to the discussion.

I turn to a class of experiments of a different order. Among all the difficulties which have beset the spread of homœopathy looms prominently a habitual use of infinitesimals. They are not in any way essential to our practice, but assert this fact as often as we may we are nevertheless identified with them, and any non-chemical evidence of the powers of the infinitesimal is a weapon of value for us. Modern physics and biology have done much for us, and the bogey of the potency is less terrifying than it was, but I planned these with a view to produce some evidence in a form capable of ready comprehension and repetition.

Yeast growing in a solution containing glucose splits the glucose into CO_2 and alcohol. This ferment action is proportional to the life activity of the yeast. Now Schulz and other orthodox oservers have shown that this activity obeys the laws of protoplasmic reactions to stimuli. Large doses of corrosive sublimate, for instance, added to the solutions destroy the yeast, rather smaller doses impede its activity, but small very small doses act as a stimulant and increase its activity. The CO_2 given off in a given time compared with a control identical in all respects save for being unmedicated gives a standard for comparison. Now the orthodox observers were content to show that dilutions of one in 5,000 or 10,000 were stimulating without diluting further. But one in 10,000 is a low potency for the homœopathist, and I determined to look for evidence of activity in higher dilutions. The method adopted (carried out under my supervision by a highly trained chemist, Dr. S. Judd Lewis, and financed by the Beit Research Fund, to whom I make all grateful acknowledgments) was to compare CO_2 production in a given time from two solutions of sugar plus yeast identical, except that one was medicated and the other unmedicated. All external conditions of temperature, &c., were of course identical for both fluids. In an earlier series of experiments the CO_2 was estimated by volume, but Dr. Lewis decided that a measurement by weight would be preferable and more accurate, and that method was adopted. The air was freed from CO_2 before admission to the fermenting fluids and the CO_2 given off absorbed, and at the end of each experiment the last CO_2 was heated out of the test vessels and the gain in weight of the absorbing tubes could then be found readily.

REPORT TO THE BEIT COMMITTEE.

The laws that govern protoplasmic activity in response to stimuli have been formulated by R. Arndt, and express the conclusion (deduced from experiment and observation) that any stimulus (chemical, electrical, &c.) which can in a certain intensity cause death or damage to protoplasm, can cause increased activity of protoplasm when administered in a lesser intensity.

This reaction is very important in helping towards an understanding of the law of homœopathy, because in applying that law physicians do administer small doses of drugs (chemical stimuli) to stimulate cell and tissue reactions and choose these drugs by their power (demonstrated on "provers") to damage those identical cells and tissues. It therefore seemed of interest to take a simple form of life and endeavour to test one of its activities under the influence of drugs in varying dilutions. The main purpose was to discover in how high a dilution any effect of the drug could be traced. The organism selected was the yeast plant, and the method of experiment and detailed reports are in the archives of the B. H. A. But a summary of results may be of value here.

The drugs used were *Arsenicum album*, *Argentum nitricum*, and *Mercurius corrosivus*.

The first experiments were done with *Arsen. alb.* The 3x depressed yeast activity constantly. The 6x as constantly stimulates, and the stimulating effect with higher potencies gradually lessens until with the 12x there is little or no appreciable difference between the solutions containing it and the controls. In other words, a drug effect cannot be demonstrated beyond the 12x. Now, as nearly all homœopathic physicians confidently expect curative results at times from much higher potencies, this failure was disappointing. An explanation of it may lie in the fact that with the yeast we are dealing with healthy cells, and in therapeutics we are treating diseased cells which are known, by clinical experience, to be in a state of unstable equilibrium as compared to healthy cells, and therefore susceptible to smaller stimuli. In the endeavour to elucidate this point further a number of experiments were made with drugged yeast. The yeast cells were treated with sublethal, but poisonous quantities of either *Quinine* or *Perchloride of Mercury*, and then dosed with *Arsenicum* as an antidote to the *Quinine* and *Argent. nit.* as an antidote to *Mercury*. The results were interesting but require additional experiment. When *Quinine* was used in a strength of one in 3,000 the effect of

Arsenicum on the drugged cells was directly comparable to its effect on normal cells, but with solutions of *Quinine* of one in 750, and one in 100, the addition of *Arsen.* seems to depress still further. At the 12x this effect disappears, but it reappears again with the 30° C., with *Argentum nitric.*, whether with drugged (*Merc. cor.*) or normal yeast, there was a marked depressant effect from the 4x, but little stimulation with 6x or 12x, more however, with drugged yeast than with normal.

Experiments were also tried with yeast growing in glucose only instead of a nutrient medium. This may be regarded as starved yeast, but we could not demonstrate any marked difference in reactions. Yeast that was poisoned and starved as well appeared less susceptible than yeast that had only been poisoned or starved.

These experiments, which it was hoped would result in more definite and final results, have been (we think) of value, but, nevertheless, need to be supplemented and extended. Another biological reaction or two should also be tested, for yeast is in some ways an anomalous organism. The differences in responses to the drugs are less marked than we had hoped, though they are so constant in the main that we hold them to be trustworthy for 3x, 4x, 6x, and 12x potencies. It may be said with confidence that the law of Arndt is duly borne out with these potencies. But much more experiment is needed with the high potencies. They more often seem to depress than to stimulate, but the effect is seldom marked enough, compared with the control to enable conclusions to be drawn with confidence, for even from the same strain of yeast one batch of cells will apparently respond better than another to stimuli. By doing always a series of experiments and taking the mean we can largely eliminate this (biological) source of error, but confidence can only come from great multiplication of experiments.

We desire to offer our best thanks to the Beit Fund Committee, whose generous grant has alone made this work possible..

C. E. WHEELER. M. D. B. Sc.
S. JUDD LEWIS, D. Sc., Ph. D.

I wish to supplement this summary, taken from the Report of the Beit Fund with a few comments. Yeast is rather an anomalous organism, and even when the same strain is used, different batches of cells seem to vary in their reactions. The fermenting power is a normal activity, and in influencing it by drugs, we are, as has already been said, in the position of trying to affect healthy rather than diseased tissue. We know how seldom healthy person is susceptible to a potency, and therefore should not marvel that the effects of the drugs in potencies are not very marked. Up to 12x the effects are small but constant, beyond that they are too inconstant to be of value. The attempts to convert healthy yeast into a nearer likeness to diseased tissues were probably too crude to afford aid, at any rate they threw no additional light upon the failure to effect yeast with any constancy with potencies above 12x. Finally let this be said, the drug does not make new fermenting power, it only makes more rapid use of the power that is there already. The drug in any quantity is probably more or less of a hindrance to healthy life. Yeast cells do not multiply more rapidly (rather less rapidly) when even every minute quantities of drugs like *Arsenic* are present. Jousset claims to have shown with *Aspergillus* a positive retarding effect on growth from potencies of 30 and upwards. Therefore in attempting to influence fermenting activity, as one only of the cell activities, it is quite likely that some drugs would be more effective than others. Possibly, if by chance a drug were used that had a more specific on this function it would be possible to demonstrate results from higher potencies. But so far such results have not been obtained with any certainty.

I fear I have done little to-night, but impress you again with the truth of the old saying, that art is long and life is short; but a succession of efforts in short lives may in time lead to a better knowledge of our most difficult art.—The *Homœopathic World*, July 1, 1914.

EDITOR'S NOTES.

A Case of Hypersensitiveness to Cows' Milk.

BY DR. D. BORLAND.

The following case was reported by C. Willett Cunningham, M. B., in the November and December number of *Clinical Excerpts* :

" A breast-fed infant, when five weeks old, was given a single bottle of cows' milk diluted with water (milk 1 : water 2), with no ill-effects. When five months old a single bottle of the same mixture was given during the mother's temporary absence. It produced violent vomiting and diarrhœa lasting twentyfour hours. Breast-feeding was resumed and digestion remained satisfactory until the sixth month, when isolated attempts to give cows' milk each produced a similar result. The attack in each case began about two hours after a meal. Vomiting and diarrhœa, accompanied by fever, continued for some twentyfour hours.

" Various forms of cows' milk were tried at intervals until the child was thirteen months old. Varieties of dried milk, such as Glaxo and Horlicks' Malted Milk produced the same effects.

" Thinking the offending substance might be casein, I tried whey, which led to severe retching and loose stools.

" When twelve months of age the infant was able to take and digest broth, soup, bread and butter, eked out with feeds at the breast, and under this diet the digestion remained satisfactory. As the breast milk was failing in quantity, a month later fresh attempts to give cows' milk (peptonised and diluted 1 : 4) were made without success.

" A change was then made to goats' milk with immediate success. There was no vomiting except on one occasion when the old symptoms returned, on inquiry, however, it was found that the vessel containing the goats' milk had by accident been used previously for cows' milk and had not been washed out.

Probably on that occasion the infant did not received more than a few drops of cows' milk in its bottle, yet this trace was sufficient to produce immediate toxic symptoms.

" Apart from this incident the goats' milk gave rise to no difficulties, and the infant throve satisfactorily. At eighteen months cows' milk in minute doses was cautiously added without ill-effect, untill at length the child was able to take it in ordinary quantities."

In considering the report of this case, from a homœopathic point of view, there are one or two features which stand out.

The first point which suggests itself, and it is a point on which considerable stress has been laid, in a slightly different connection, in a recent paper in the *Homœopathic World* is the fact of the single dose. There was but one dose-feed of the "morbific agent" administered and yet the susceptibilities of the infant were completely altered. It is a well-known fact that when the human variety is not obtainable children can digest and do thrive on cow's milk, or in other words that continued use or repeated administration of this substance does not give rise to intolerance. Again it is becoming a fairly well recognised fact among the majority of homœopathic prescribers that when a drug is clearly indicated and well selected an affect is produced at once and by the first dose, while with the continued administration of the drug the effect ceases to be apparent, a tolerance becomes established, and either the quantity of the drug—if given in the crude form—or the potency—if prepared after the Hahnemannian method—has to be changed.

Here a second point naturally suggests itself, and that a point which daily presents itself as a difficulty in practice, namely what is the duration of action of this single dose? About four months after the exhibition of the initial dose of cows' milk a second was given, and the infant was still intolerant! It is doubtful if any inference can be drawn from the later experiences, as the intermediate administrations may

have acted as repetitions of the initial dose, and there is no record of the exact date of the administration of the contaminated goats' milk.

A third point illustrated by this case is from a homœopathic point of view of almost equal importance. Here we have an example of a profound effect produced in a child by the administration of a single dose of what is looked upon as one of the staple articles of a child's diet, and in the after history we have a proving, fragmentary and incomplete be it admitted, but still a proving of crude cows' milk administered to a susceptible individual and recorded for an entirely different purpose by one presumably profoundly ignorant of the whole of homœopathic lore.—*The Homœopathic World*, January 1, 1914.

The Public, the Germ and the Doctor.

She was 84 years old (this is a true story) and she had a fall, striking her face and bruising it. She had the hurt bound up by those of her own household. Afterwards, being asked why she did not call in a doctor, she replied that she was afraid of germs. She said doctors go from one patient to another without being fumigated or disinfected and if what "they say" about germs is true they must be dangerous in a house. As said before, this is a literally true story, told to us by a relative of the family. The old lady was severely logical. The lesson is obvious.—*The Homœopathic Recorder*, April 15, 1914.

He Believed in Medicine.

The following story is taken from the *Lancet*. Please note that the men lived to be 65 years old: "In the year 1814

one man created a record by swallowing not fewer than 51,590 pills. His name was Samuel Jessup, who died at Heckington in Lincolnshire in 1817, aged 65. He was an opulent grazier, a bachelor, without known relatives, and for the last 30 years of his life possessed a craving for what was then called 'physic.' In 21 years he took 226,934 pills supplied by an apothecary of the name of Wright, who resided at Bottesford. This is at the rate of 10,806 pills a year, or 29 pills each day, but towards the end he took 78 a day. Notwithstanding this he took 40,000 bottles of mixture, juleps and electuaries. Some of these particulars were disclosed at a trial for the amount of an apothecary's bill at Lincoln assizes shortly before his death."—*The Homœopathic Recorder*, April 15, 1914.

Reforming "Habits."

The good people put down liquor (in many places) and morphine took its place; they put down morphine and cocaine took its place; they put down cocaine and heroin takes its place; they may put down heroin and something else will come up, for according to the eternal homœopathic law cures, *i. e.*, reforms, must proceed from within outward. To cut off the supply is not a cure but a suppression, the disease remaining and it will surely break out despite all the prohibitory laws from Maine to Texas. Deep down you will find in this matter the same difference that exists between what is broadly known as allopathy and Homœopathy. Allopathy stands for suppression, for cleaning the outside of the cup and platter, while Homœopathy stands for cleaning the inside.

Incidentally it is said that a drug house recently received an order for 20,000 heroin tablets, 1-6 to 1-12 grain, and as many every week.—*The Homœopathic Recorder*, January 15, 1914.

Dangers of Ozone in Purifying the Air.

By PROF. R. B. SMITH.

There is a widespread belief in the all-healing powers of Ozone. Ozone is believed to be a constituent of our atmosphere under certain conditions. We hear the climate of this place or that place praised because the air contains Ozone. The tubercular patient, going to the mountains in search of health, believes it is Ozone that will make him well again. School boards, theatre managers and the trustees of churches have installed Ozone-making machines in their audience rooms in perfect faith that by so doing they have done all possible to make the ventilation perfect.

It may prove interesting to see how these ideas have arisen, and what is the real truth regarding the health-giving properties of Ozone.

As early as 1785 a chemist, Van Marum, noticed that when the electric spark was passed through air a strongly-smelling substance was formed. When pure Oxygen was used the reaction was more pronounced.

In 1840 Schonbein further investigated the phenomenon, and found the new substance to be a powerful oxidizing agent, a gas having a strong smell, and gave it a name from the Greek, meaning "to smell." Schonbein went further, and showed that the gas might be formed in three ways:

1. By passing an electric spark through the air.
2. At the positive pole when acidulated water is subjected to electrolysis.
3. When phosphorus is allowed to oxidize slowly in moist air.

For a long time after this work the true nature of the gas remained in doubt, but it was finally proven to be a condensed form of Oxygen, a so-called "allotropic" form.

By an allotropic form of an element we chemists mean a "modified or changed form." We might consider Ozone as a

twin brother of Oxygen ; but, as we are all aware, although twins may look exactly alike, and may be able to wear each other's clothes, they may be quite different in disposition. Thus it is with Oxygen and Ozone. A very striking and familiar example of allotropic forms of an element is seen in carbon, which exists in such widely different forms as charcoal, graphite and diamond.

We are still in some doubt as to whether Ozone exists in the atmosphere. It has been assumed that it does, and that it has been formed by the passage of lightning flashes through the air. We know that hydrogen peroxide, another strong oxidizing agent, and oxides of nitrogen are formed by the electrical discharge of a thunderstorm. The test used for Ozone likewise indicate these other substances, so we cannot be sure of ozone's presence. Some observers claim its presence from its odour, but even this may be disputed. These observers look upon the smell as the only reliable test, and claim that the gas is frequently present in the air of country or seashore.

It has been claimed that ozone cannot exist in the presence of organic matter, hence the conclusion was reached that the gas must be a powerful germicide, and this uncertainty has been popularized and commercialized to the detriment of the public health. Another reason men believed ozone to be a destroyer of germs is because it is closely related to hydrogen peroxide, which is a strong antiseptic agent. Thus from very slender premises far-reaching conclusions were drawn.

Now just what is the truth in regard to ozone as a health giving agent ?

More than twenty years ago a chemist named Ohlmüller performed a series of experiments to test the germicidal action of the gas, and his conclusions should have very seriously damaged ozone's good name. But, strange to say, no one seemed to pay any attention to his work. Now three other chemists—Drs. Jordan and Carlson of Chicago and Dr. Sawyer of the California State Board of Health—have reported results

which settle the question for all time. These results appeared in a recent number of the *Journal of the American Medical Association* and in the *Journal of Industrial and Engineering Chemistry*.

The advocates of Ozone make for it the following claims :

1. "Ozone is a necessity as a destroyer of germs for the sterilization of the air of operating rooms, the rooms of persons suffering from infectious diseases, and to give to the air of office and school room the invigorating tone of the mountains and seashore.

2. "Ozone cannot exist in the presence of organic matter, so its presence in the air proves the absence of bacteria.

3. "Ozone is unique as a germicide because it has no deleterious effect on the higher forms of organic life."

In refutation of this the research of the first two workers offers the following :

1. "Ozone has little effect upon bacteria. Some are without a doubt killed when, in a moist condition, they are exposed to the gas in a concentrated form. It has been proven, however, that human beings are injured by a quantity of the gas so small as to have absolutely no effect upon germs. Or, to put in another way, man cannot tolerate ozone in sufficient concentration to kill bacteria.

2. "Ozone in high concentration will oxidize certain ill-smelling compounds of bad air, but the resultant oxidization product may have a worse smell than the original. In many cases where the gas destroys an odor this seems to be due to its anæsthetic effect of the sensory nerves. Thus nothing is accomplished by masking the smell of bad air in a workshop or school room by an agent which simply deadens the sense of smell.

3. "Ozone has an injurious action on the cells of the respiratory tract, and breathing the gas for any length of time causes depression, headache and drowsiness. Further-more,

the cells injured by Ozone are probably more easily invaded by the bacteria which are the special enemies of the respiratory tract. "

And it may not be too much to say that persons working or studying in a room where the air is purified by means of Ozone will be more subject to colds, bronchitis, etc., than those working in air which is bad from some other cause.

"We might as well," say these gentlemen, "make the air of our rooms pure by applying our noses to the smelling-salts bottle, or by taking a few puffs of a cigarette, as to set up an Ozone machine. "

4. The final conclusion is that ozone is not only worthless as a germicide, but absolutely dangerous.

Dr. Sawyer's article is entitled "The Alleged Purification of the Air by Means of the Ozone Machine." It may be summed up as follows :

1. The gaseous products of the Ozone machine are irritating to the respiratory tract, and in concentrated form produced the death of guinea pigs, which were the test subjects.

2. A concentrated form of Ozone which will kill typhoid and other bacilli in a number of hours killed the guinea pigs in a comparatively short time.

3. Since the products of the Ozone machine are very irritating to the mucous membranes, the machines should not be used in schools, offices or other places where people remain for considerable periods of time.

4. The Ozone machine masks odors, conceals faults in ventilation and produces products which are injurious to health. It can not, therefore, be properly called a hygienic device.

A new disease has been discovered by the German physicians of which the wireless operators controlling high power apparatus are the victims. It has been found that the operators have a

greatly reduced number of red corpuscles in their blood, and disease manifests itself as an anemia, with the consequent general weakness. The large amount of Ozone in the instrument room, due to the high-frequency current used, is assigned as one of the causes.

It is probable that if these new researches on ozone are given wide publicity the much-advertised Ozone machine will suffer greatly in its popularity, and that which has been considered a health-giving device will be recognized as a positive danger.

It is also quite evident that we may no longer look upon Ozone as being the life-giving agent in country and sea air.

Furthermore, the data here given points out to both physician and layman the great danger in placing confidence in an advertised hygienic device before its action has been properly tested —The *Medical Advance*, March, 1914.

Size and Repetition of the Dose.

Claude Bernard discovered that the action of drugs upon the sick does not vary from their action when given to those in health.

Hippocrates stated that what causes dysuria will cure it.

Hahnemann proved that, according to the doses, a drug has two actions : a primary and a secondary. He relied merely upon experiments performed upon man, to convince him of this ! Will not some lover of science, some day, challenge this limitation ?

The provings of drugs upon man have established the homœopathic materia medica, which is but the panorama, or the graphic reproduction of the ills to which mankind is heir.

Who of us, at the bedside, has not found belladonna, lachesis, sulphur or arsenicum confrontingus ? Did we not recognize them because we had seen their pictures in the materia medica ?

We can make an opium case by feeding one opium. But how shall opium cure a case that closely resembles the opium of our materia medica ?

This is the *pons asinorum* where dull allopathy always breaks her neck. Yet it is so simple to understand how !

If a patient present the counterpart of opium, and we give him large, or repeated, doses of that drug we shall aggravate his symptoms, but

If we use the attenuated, or potentized, dose, we correct his troubles with opium.

Hence we say : the potentized has the opposite virtues of the crude drug.

The energy of any given disease expends its action upon the sick, and the sick answers to it by reaction.

The reaction of the individual, if greater than the dynamic action of the disease, leads him back to health ; if weaker, the sick must die, and then the orderly vital force turns the bodily estate over to its conqueror. *The Journal of the American Institute of Homoeopathy*, July, 1914.

Clinical Notes on Radium Water.

By T. E. PURDOM, M. D.

While attending a lady in the country lately, I found her daughter had been taking radium water for some time, as supplied by Ambrecht, Nelson and Co., whom the father knew. I asked for a few particulars of her past and present state in relation to this treatment, which seems to have done her good.

Miss W. has had symptoms of rheumatic gout or arthritis in region of the left hip and sciatic nerve. She had had Swedish massage at Smedley's. In 1908 was very lame, walking with stick and having to recline much to relieve pain. Fango baths and massage did much good. During the winter of 1910 and 1911 the pain returned, and this time was bad at night and the leg ached when reclining. Roller skating seemed to help her for a time. There were long-continued pain and aching after much exertion. In the spring of 1911 the symptoms were still present and inclined to get worse. In June, 1911,

the symptoms were as follows: "The bone on which we sit, left side, is tender and aching while sitting, as it has been all the time; had to sit on the right side. Aching pain in the sciatic nerve. Difficulty in extending the leg after lying or sitting. Aching in bed at night and loss of rest; had to use small back pillow to take off pressure. Tongue had a dark yellow coating.

"At this stage radium water came under notice and was tried. After two or three weeks the tongue was improved; slight constipation and then bowels more regular, stools easy and thorough. Nights improved; better sleep. The aching pain was some days better and some days as bad as ever. The radium water was continued with a break of a week after the first month till the middle of August. A change to Ireland, a mile from the sea, aggravated the symptoms. On returning home about the middle of September the leg became much better. The pain shifted to the side of the spine." Lately Miss W. has had to do much more standing and walking about the house, and there has been no noticeable aching. In June the patient could not have done anything like what she has done lately. Miss W. has taken nothing medicinally but radium water, one teblespoonful before breakfast, at midday and at night.

A pulsating contraction of the muscles of the leg has been visible during June, July, and August, and noticed again on October 6. This month, since the colder weather, the pain has returned in a milder form. She has started taking radium water again.

I record these few notes, not because the results are very striking, but rather to draw attention to radium water. The patient certainly seems to have derived benefit from it and is encouraged to go on with it again. Mr. Ambrecht mentions rheumatism, neuritis and arthritis as being relieved by a course of radium water.

This water seems to be produced by the action of a fluorescent saline water on some salt of radium and on pitchblende. Probably others have tried this preparation and can record some results. The dose of radium must of course be very infinitesimal. There is no record in this case of ordinary homœopathic treatment having been tried before beginning the radium.

A more recent report (February 6, 1912) states that Miss W. has been skating and dancing in the most busy manner and suffers no ill-effect whatever. She is still taking radium water, and I feel sure is getting benefit from it.

Just lately I have been treating a case of neurasthenia with radium. For one week I gave radium water as provided by Ambrecht. I then continued giving radium bromide 30 and 12x. The patient has decidedly improved, and more so since beginning radium preparations than when taking glycerophosphates. She has had general massage also for many weeks.

It would be difficult to find out the approximate dosage of radium in radium water. The father of this lady writes (February, 1914): "My daughter did not get much benefit till she had taken radium water two or three months, which is rather a slow result."

The father is now taking it with benefit for sciatica. He also mentions the case of another lady in Purley, who has had a three months' course (from the Radium Institute) for sciatica with decided benefit.

In the *transactions* of our International Congress held in 1911, Dr. Dieffenbach and others give an epitome of radium bromide provings. One paragraph reads thus: "It should prove to be one of the most useful remedies in gouty and rheumatic conditions, for all the provers, without exception, had symptoms of muscle and joint pain, with the modality of worse on motion, the pain gradually wearing off. While these provings were going on, Professor His, of Berlin, published an article on the use of radium in gout and rheumatism, which corroborates the homœopathic principle in every respect." Professor His insists that the earlier the case is taken the better the results. He cites cures of polyarthrititis and chronic myalgia which are astonishing. The provings of Dr. Dieffenbach and others are given in schema form in the *Homœopathic World* for November and December, 1912, and January, 1913. These confirm the principle of similia in the benefit derived from radium bromide and other preparations of radium in rheumatic and gouty conditions. Such symptoms as these are prominent: "Had severe aching pain all over the body." "Hardly able to move about." "Pains in all limbs not better for moving about, but they wear off." "Arose feeling very stiff and lame." "Dull backache lower lumbar region." "Pain like electric shocks in lumbo-sacral region," &c. The symptoms of the extremities are very suggestive of rheumatism and gout, and neuralgia or neuritis.—*The British Homœopathic Journal*, July, 1914.

Gleanings from Contemporary Literature.

MEDICAL COLLEGES AND STATE BOARDS OF EXAMINERS.

BY AUGUSTUS C. UMBREIT, Esq.

Right to an Education

To acquire an education is a natural right. This right is protected by the law of the land. The right to an education includes the right to acquire an education generally and an education along special lines, that is, an education in general so as to become and be known as learned "educated," without possessing a special training and consequent presumed fitness for any recognized special line of human endeavor; and an education fitting specially for a calling or profession, demanding a peculiar training in order efficiently to meet the demands of such calling or profession. To acquire a medical education is the natural right of every American citizen, a right which may not be denied him, either as to the place where or the manner in which, he may choose to acquire such special or professional training.

To Practice Not A Right

To practice any one of the learned professions is not a natural right. No one has a right to practice law or medicine except under the regulations the State may prescribe. To practice law or to practice medicine is not a privilege, much less a right, of citizenship guaranteed and protected by the law. While to practice medicine is not a natural right nor a privilege of citizenship, nevertheless such a right to practice is a qualified franchise or prerogative, the qualification being the compliance with the regulations imposed by the State. If the regulations so imposed are met, right to practice becomes a legal right, protected by the law.

Mission of Medical Colleges

To furnish a medical education to all who desire is the purpose and object of every reputable medical college. There are, of course, two kinds of institutions furnishing such special training, namely, state or public institutions and privately owned and conducted institutions. In this discussion I shall eliminate the state or public institutions and confine myself to medical colleges owned and operated by private corporations. Since the right to acquire a

professional education is a natural one, medical colleges are entitled under law to furnish such an education to all who apply, but being private corporations, may impose such qualifications as they see fit upon those who seek to enter their walls as students. What these qualifications should be no one, not even the state, can dictate to these corporations, provided always that such qualifications do not violate the law.

Right to Teach Different from the Right to Practice

Remember, however, that the statement just made is limited only to the point of permitting a person to become a student in a medical college for the purpose of acquiring knowledge of the science of medicine. As far as the right to practice is concerned, after the acquirement of such knowledge and training, the statement referred to does not apply since it has been judicially held that while no state by its laws, or no agency of the state, by its boards or other tribunals, can dictate to privately owned medical colleges whom they shall receive as students and what they shall teach, nevertheless when it is proposed by such privately owned institution to prepare men and women for the practice of the medical profession, then the state by its laws and by its boards, may direct and even command what shall be taught and how long such teaching shall continue. The distinction has been clearly drawn by our courts, as already stated, between the right to acquire a professional education and the additional privilege to practice the same. The amount of professional education a person may acquire lies entirely within his own discretion, but the amount and kind of such professional education necessary to entitle the person acquiring the same practically to apply his acquirements, is subject to state supervision and control.

Purpose of State Boards of Examiners

The state having the right to supervise the practice of a profession and to dictate upon what terms persons may so practice, it becomes necessary to determine in what manner such supervision should be exercised and the laws having the regulation of the practice in view, should be administered. Hence state boards of examiners have been appointed in practically all of the states of the Union. To these boards are given large and important powers, in some instances, possibly, too large a discretion. Nevertheless it must not be forgotten that these boards represent a department of the state, a branch of that power of the commonwealth known as the police power. The police power of a state is a very elastic

function, made necessary by our constantly increasing complex civilization, but nevertheless cannot be exercised as an unrestrained power of the state. Boards of examiners, while clothed with important functions and powers, cannot exercise any discretion beyond that given them by the law itself or necessarily implied from the provision of the law.

Relation between Medical Colleges and Boards

Medical colleges, possessing certain rights by reason of their incorporation and the object for which they were created and are being operated, and state boards, having been created for the purpose of supervising and regulating the practice of medicine, very naturally created a situation where knowledge of what rights may be exercised by the former and what supervision may be enforced by the latter, becomes exceedingly important to both. It is quite clear, therefore that it is a question of supreme moment to medical colleges to note what their rights are under the law in order that state boards of examiners do not trench upon these rights by an attempt at unreasonable and unlawful regulation.

Difficulty in so many Standards

I take it for granted, of course, that all medical colleges worthy of the name, intend to comply with all legal requirements in fitting their students for the practice of the profession. The presumption of law is to that effect. But the first difficulty that presents itself to a medical college fitting students for the practice of medicine for all, or at least some of the states of the Union, is the fact that the various states have varying medical practice acts. All the states that have medical practice acts, as far as I know, require as a condition precedent to application for practice in the state, a diploma from a medical college. It is generally stated in these laws that such diploma shall be from a reputable medical college. It is generally further provided in the law itself what shall constitute a reputable medical college. The difficulty is that in defining what shall be considered a reputable medical college, the laws of the various states are not uniform and it is quite probable that the test of reputability in the United States may be a forty-eight fold one. This situation presents a very practical difficulty to an honest medical college. What to do under these conditions is a question which each medical college must solve for itself. As a general rule, I would suggest that meeting the requirements on this point of the most exacting state would come very near solving this difficulty. In

other words, a medical college which will prepare its curriculum and conduct its college so as to satisfy the demands of the state having the strictest regulation will have solved this somewhat difficult proposition.

What is a Reputable Medical College?

I have already stated that most of our medical practice acts define what is a reputable medical college. In this respect it must be remembered that the word "reputable" means something more than having a good repute. It has been judicially held that it means practically the same as character in the case of an individual, namely, efficient in fact, furnishing a professional education which is on a par with the advanced stage of the science of medicine, giving a training which in fact prepares the student for the practice of the profession, sufficiently equipped to furnish such training and insisting that persons seeking to acquire such an education actually have acquired it before certified as qualified by a diploma.

Definition of Reputability

The legal requirements as to "reputability" of a medical college are generally defined by our Statutes as :

First : That such college require at least four courses of seven months each, taken in four different calendar years ; and

Second : Require for admission to its curriculum a preliminary education equivalent to graduation from an accredited high school.

These requirements are very general and appear simple enough. The enforcement of these requirements is the duty of state boards of examiners. It would seem that little difficulty would be experienced by medical colleges in complying with these simple requirements and that boards of examiners should have no difficulty in enforcing them. Nevertheless on these two points we find frequently a constant between medical colleges and state boards of examiners. It is assumed in this connection that both the colleges and the boards where a contest arises, are acting in the utmost good faith. Unfortunately, that is not the fact in all cases.

Differences Encountered in Enforcing Reputability

The first difficulty that often arises between medical colleges and state boards of examiners when attempting to enforce this statutory definition of reputability, is in regard to the preliminary

education required. It is the policy of the law, it is the policy of the profession generally, I believe, that person now seeking to enter into the practice of medicine ought to be a broadly educated person, educated generally in addition to this professional equipment. The time has passed when a man can leave the farm or a trade with barely a common school education, and enter upon a training purporting to fit him for the practice of medicine. While some of the most noted and successful practitioners of the past have been men without any preliminary educational training, this fact does not justify us now in ignoring not only the desirability but necessity of a preliminary non-professional, general education.

Preliminary Education Equivalent to High School

It is to be noted that the statutory requirement as to a preliminary education provides that it shall be "equivalent to graduation from an accredited high school." The trouble in this connection is—what is "equivalent" to a high school education? Hitherto medical colleges, with the permission of state boards of examiners, have allowed students who were not graduates from an accredited high school and who were deficient in some of the branches required of high school graduates, to be conditionally matriculated, permitting such deficiency to be "made up," during the first year of the medical course. One Supreme Court, at least, has held that such procedure is a reasonable one and that a state board of examiners could not refuse to recognize the graduates of a college so permitting a student to supply his admitted deficient preliminary education. However, in my personal opinion such a procedure is a dangerous one and to a great extent emasculates the requirements of a proficient and sufficient preliminary education. In New York no such conditional matriculation is permitted on the part of the medical colleges who desire to be registered in that state. I believe such a regulation is a reasonable one and ought to be readily endorsed by first class medical colleges. I, would, therefore be inclined to hold that any state board which refused to recognize a medical college as reputable because it permitted conditional matriculation in the manner just suggested would be a reasonable regulation and any medical college which would complain of such regulation would be without standing in any court of law and equity.

Allowing Credits from Other Schools

Another difficulty that has arisen in connection with the enforcement of this statutory requirement of reputability by state boards of examiners, is the matter of allowing credits to students for work done in other medical colleges or institutions. You must remember that medical colleges, in order to be reputable, must require, and hence furnish, at least four full courses of instruction of seven months each, such courses to be taken in four different calendar years. Students will shift from one institution to another. To receive students from other institutions is a right any medical college may exercise. The only question that can arise is what credit is a reputable medical college to give a student coming from another college. Of course, it is clear that if such student comes from an institution as reputable as the one which receives him, full credit may be given for the work done in the former institution. But if the student comes from an institution of doubtful reputability the question is an entirely different one and in such case no first class medical college would give such student full credit for work so done, if any credit at all.

Diploma Should be of Full Face Value

A diploma from a first class medical college should mean something, should have a value fully equal to the face of diploma. Hence I am of the opinion, that if a state board should refuse to recognize the diploma of a reputable medical college in the case of a student where such college gave him a credit for work done in another institution known to be not reputable, that is, as not preparing its students efficiently and properly, such a ruling on the part of such state board would be proper and sustained by the courts.

Combined Degrees, B.A. and M.D.

In this connection another question arises and that is the matter of combined degrees, that is, giving in some instances a baccalaureate and medical degree to persons who complete the work of an academic course and a medical course concurrently. Of course in the case of a university or college maintaining a medical school as part of the institution itself, the giving of combined degrees may be without danger to the public, provided sufficient time is developed to the two sources. It has been established as a regulation by one state, at least, that where a university or college maintains a registered medical school, it may confer academic degrees and medical degrees as the result of a combined course

covering six years and in the case of other colleges combined degrees may be given if the two courses, concurrently taken, cover a period of seven years.

Mere Affiliations

It is a matter of common knowledge that many medical colleges now are affiliated, more or less closely, with colleges or universities conferring academic degrees. The danger lies in this connection in the fact where there is merely an affiliation, often merely nominal, that the combined degrees may be given to a student whose work, either in the academic department or in the professional department, has been deficient, either as to time or the character of the work done. It is the clear purpose of statutory regulations that a college in order to be reputable shall give, and insist its students in taking, four full courses of special professional training before a diploma be issued, attesting the completion of such training.

Purpose of Medical Legislation

Medical practice acts were enacted for the protection of the public. This object is the only one which justifies their enactment or their enforcement. The regulation of the practice of medicine is not for the purpose of protecting the profession, much less for the purpose of protecting medical colleges. Hence, every supervision and regulation of the practice of medicine must in some way be conducive to the reasonable protection of the public. Rules and regulations which go beyond this will not be endorsed by the courts when there challenged. Therefore the rights of medical colleges as private corporations must be measured entirely by the fact whether the rules and regulations adopted by the various states, which they are required to meet in preparing their students, can reasonably be construed as tending to protect the public. If they do so protect, medical colleges must meet these rules and regulations. If they do not, then these corporations cannot be compelled to meet them.

Statutory Rules and Board Rules

Hitherto I have been considering statutory rules and regulations as to the reputability of medical colleges, reputability in this connection meaning the recognition of the diploma of such medical colleges by the examining boards of the various states. Broadly speaking, it may be stated as a principle that provisions of a statute defining what shall be considered a reputable medical college will be sustained by the courts and hence can be enforced

in all cases where the medical practice act itself has been held constitutional or the constitutionality of such act has not been challenged. But the statutory rules and regulations on this point are not the only ones because practically all state boards have adopted additional rules and regulations by which they measure the reputability of medical colleges and which they seek to enforce. Under this branch of regulation arise questions which courts frequently have been called upon to decide. In deciding the rules and regulations of a board of examiners, courts have properly adopted much more stringent principles and have scrutinized such rules with much more care than when considering statutory rules. And there is good reason for this attitude of the courts. The human elements of state boards of examiners cannot be eliminated. The unfortunate existence of various schools of practice in the medical profession furnishes a field for discrimination, into which some boards have not hesitated to enter. The general rule of courts when considering the regulations of a state board of examiners is that such regulation must clearly be reasonable, that is, the enforcement of a regulation so adopted must clearly tend to promote the protection of the public against the unlawful practice of medicine. It might be stated that while statutory rules must also be reasonable, board-made rules must be more reasonable; by which I mean that the direct benefit of the enforcement of such rules to the public must be clearer than in the case of statutory rules.

Statute Given Power to Make Rules

Generally the medical practice acts of the various states give the boards of examiners power to adopt rules and regulations, although the function thus conferred is generally quite limited. Thus the Wisconsin Statutes provide that—"said board shall have power to adopt such rules for its government and may require the filling out of such blanks by applicants as it may deem necessary in order to ascertain the true character and qualifications of an applicant for license, and the board may, in its discretion, refuse to grant a license to any person who does not furnish satisfactory proof of good moral and professional character." This rule, of course, is entirely and clearly reasonable. It gives the board no power to determine the reputability of a medical college by rules of its own beyond those given in the Statute itself. The power to make rules conferred by this provision clearly means the making of rules for an orderly method of doing the ministerial business

of the board. No medical college need fear any rule of this kind.

Rules of Other State Boards

Other states, however, have not been so careful and circumspect in conferring upon boards of medical examiners the power of making rules and regulations to determine the reputability of medical colleges. Probably the most liberal conferring of power in this respect has been in the state of New York. The method of regulating the practice of medicine in that state, including the determination of what are reputable medical colleges is *sui generis*. A board of regents, meaning the board of regents of the University of the State of New York, appoints nine members to constitute the board of medical examiners; but this board of examiners is given merely the power to perform the clerical act of examining candidates for licenses, since the questions that may be asked in any particular examination must be submitted to the Regents and approved by them and the Board of Regents determines who may not take this examination and the examination itself is conducted by an examiner appointed by the Regents, and a license is issued by that body. This Board of Regents makes all the rules and regulations governing the practice of medicine in the State of New York, and has been given the power to make, and have made, rules to determine the reputability of medical colleges. The medical practice act of that state directly confers upon this Board of Regents the power to establish a standard of reputability of medical colleges. Consequently the Board of Regents of New York have divided medical colleges of the country into three classes, namely, those whom they registered, those whom they have accredited and those whom they refuse to recognize at all. The highest grade attainable by a medical college in that state is to be registered by this Board of Regents and, in passing, I may state that colleges who have been so registered, have been recognized generally, whether properly or not, as the highest grade of medical colleges and such registration has been accepted by state boards of examiners generally as a badge of complete and unquestionable reputability. As far as I know, the statute of no state has made any provision that registration of a medical college in New York shall be accepted by the various state boards as conclusive evidence of reputability, although it may be stated that if the Board of Regents of that state have adopted and enforced reasonable rules and regulations on this point and have acted without prejudice or

bias, no wrong has probably been done or will be done to any particular medical college.

The Rules of the Regents of New York

I will now briefly consider the general rules and regulations that have been adopted by the Board of Regents of New York as determining the reputability of a medical college, to-wit, the requirements for registration in that state of such colleges. These rules are :

Amount of Equipment

(1) The college must have apparatus and equipment and resources of \$50,000. This rule, in my opinion, is dangerously near the line, dividing a reasonable from an unreasonable rule. It must be admitted, however, that a reputable college to do efficient and satisfactory work as an institution of professional learning must have adequate equipment and possibly a certain financial value of such equipment may be a test of the sufficiency thereof. Therefore, it is more than likely that this rule would be held a reasonable one in case it was tested in the courts.

Six Salaried Instructors

(2) A college must have at least six full-time, salaried instructors, giving their entire time to medical work. I am inclined to think that the requirement of having six full-time professors or instructors in a college is a reasonable one, but there is some doubt as to the added requirement that such instructors be salaried. If some enthusiastic and able member of the profession is willing to give instruction without compensation that ought to be the business of the particular college, as well as its good fortune. I understand that when a medical college applies to New York for registration the names of the salaried instructors and the amount of salary paid each must be given. If the Board of Regents of that state should decide that the salaries paid such instructors were too low or too high, and on that ground refused to register a medical college, such decision would be unreasonable and would find no support in a court of justice and equity. On the whole the regulation generally that there be six full-time instructors in a medical college, in order to be registered, would be held a reasonable regulation.

Full Four Years Course of Instruction

(3) The college must have a graded course of four full years of college work in medicine and this has been construed by the Regents as meaning four years in the medical college itself. This

rule is merely a restatement of the statutory rules I have already discussed and the only possible exception that might be taken to this rule is, perhaps, the interpretation placed upon it that the letter of this rule is violated by the granting of a combined academic and professional degree where it might appear that some of the work done by the professional degree. Except for a possible narrow and prejudiced construction of this rule, it would be held reasonable.

Preliminary Education Requirement

(4) A college must require for admission not less than the usual four years of academic or high school preparation, or its equivalent. This rule is entirely reasonable because it is merely a repetition of statutory rules generally on the question of a required preliminary examination.

No Conditional Matriculation

(5) The college shall not matriculate conditionally students deficient in any part of the preliminary education requirements. This rule may or may not be reasonable, depending upon its interpretation and application. If the rule is interpreted to mean that no medical school shall matriculate a student for the purpose of granting him a degree so as to be eligible to take an examination for admission to practice, then the rule will be sustained as reasonable. If, however, it should be interpreted and applied as meaning that under no consideration shall a medical college matriculate a student so as to enable him to study medicine, unless he has met all the requirements of a preliminary education, then the rule would be unreasonable and not sustained. By this last statement I mean that such a rule could not prevent a medical college, if it so desired, to matriculate students who desire to acquire medical knowledge, but who are deficient in their preliminary education, provided the college informs the student that it could not and would not grant them a degree upon the completion of the course by reason of deficient preliminary education. The Supreme Court of Wisconsin has held that a rule of an examining board, determining that a college is not reputable because some members of its senior class were deficient in the preliminary education and would therefore not recognize other members of the same class not effected by this infirmity, was unreasonable and compelled the board to recognize such members of the senior class of the college in question who had the necessary preliminary education.

Statements in Announcement or Catalogue

(6) The circular, information, announcement or catalogue of the medical college must not contain statements which are in violation of these rules adopted by the Board of Regents, for the right of registration. It strikes me that this rule goes a little too far to be held reasonable. The purpose, no doubt, is that medical colleges shall state to the world in their publications the exact truth as to the work done by them, and that they shall not publish one course to the world and upon application for registration contradict such statement by their admission on the application blank. The real objection I have to this rule is that it gives an opportunity for the Board of Regents, or its employees, to split hairs, to cover up prejudice or bias under a strained construction of the letter of their own rules, and I am satisfied that if a college would show in court that it has substantially complied with the spirit of the reasonable rules of the Board of Regents, it could compel registration, notwithstanding statements found in its announcement or catalogue. Of course, I base this last assertion upon the assumption that no fraudulent statements are published by the medical college. It has been judicially determined that a rule of a board of examiners to the effect that a college shall be deemed disreputable because it accepted students at lower rates than those published in its announcement or catalogue, was unreasonable because the college is a private corporation, and hence has the right to make all lawful contracts and even to discriminate in the tuition it charges its students, if it so desires, and the students do not complain.

Disreputable if it Matriculates Deficient Students

(7) Another drastic rule seems to have been adopted by the Board of Regents of New York providing that any medical school that matriculates a student who has not completely complied with the admission requirements must be forthwith excluded from the list of approved schools. While I generally endorse this rule as purporting to compel medical colleges generally to insist upon an adequate preliminary education on the part of the student seeking matriculation, yet, as already indicated, a strict enforcement of this rule which would result in striking a medical college from the registration roster of that state simply because the college permitted an unqualified student to register under an arrangement that he was not to receive a degree would be held unreasonable and unjust.

Allowance for Work Done in Other Institutions .

(8) The college must make no allowance whatever in the period of study for work not done in an accredited medical school. No credit is to be given graduates in liberal arts and sciences, in dentistry, in veterinary medicine, in pharmacy and other subjects taught in professional and technical schools not medical. This is an entirely reasonable rule and would be uniformly sustained. Of course this rule is not enforced to the letter in cases when properly combined baccalaureate and medical degrees have been given under conditions hereinbefore discussed.

Result of New York Rules

From the last hand book published by the University of New York, giving the laws, rules and information with regard to the practice of medicine in that state, it appears that of the 120 medical colleges in the United States, 74 are registered in New York, 34 are accredited and 12 are not recognized or listed at all. As near as I can gather from this record, 5 homœopathic medical colleges are registered and 3 are accredited. As already suggested, registration of a medical college in New York has been accepted as the badge of highest standing of such college. It may be stated as a fact that a diploma from these 74 registered medical colleges will be accepted by all state boards as a diploma from a reputable college, while a diploma from an accredited college will be subjected to scrutiny and no doubt, in some cases would be rejected as not given by a reputable medical college.

Medical Colleges not for Profit

I take it for granted that corporations owing, maintaining and operating medical colleges have engaged in such enterprise not with the primary view of conducting a commercial undertaking, but rather for the purpose of furnishing an opportunity to the men and women of the land of equipping themselves properly for the practice of medicine. Hence these corporations welcome any movement or any legislative enactment which will have a tendency to raise the standard of the profession. The trouble with many of our state medical practice acts is that these laws are too complicated in many instances and too difficult of successful administration, in order to accomplish their purpose, namely, effective protection to the public. In my judgment, one remedy, if not the remedy, for our present ineffective medical legislation, can be found in the enactment of a simplified medical practice code eliminating the

unnecessary existing provisions, avoiding unnecessary limitations upon the practice and making violations of such code serious criminal offenses.

Attorney for State Board

I have been the attorney for the Wisconsin State Board of Medical Examiners since 1897, the year of its creation. I have been concerned in the preparation of practically all of the medical acts upon the statute books of Wisconsin. I have conducted the prosecution in practically all of the cases where persons were charged with violation of the medical laws. The laws of Wisconsin are as stringent and drastic in regulating the practice of medicine and in punishing violations of the practice act as those of any state, yet after all these years of experience, as just indicated, I am compelled to admit that the quack and the medical charlatan are still abroad in Wisconsin, that imposition upon the public on the part of these confidence men is practically unabated and that repeated convictions and punishment of the malefactors has apparently made little impression upon these exploiters of human infirmities. In fact the prevention of practice on the part of those who have absolutely no qualification has been substantially a failure.

The Simplified Wisconsin Act

For the past two years I have been seriously considering what, if anything, could be done in direction of simplifying our medical practice act and making it effective when so simplified. After gathering information from all available sources, consulting those who rightfully might be considered experts and as a result of my own personal experience and observation, I finally reduced my conclusions to concrete provisions and drafted a new medical act for the state of Wisconsin, repealing all the existing statutes and secured the introduction of the same into the Legislature of 1913. Since this bill contained a number of novel and, perhaps, revolutionary provisions and since medical men generally, as well as medical colleges are interested in every-thing legislative which effects the practice of the profession, I desire, in connection with the subject under discussion, to submit to you a few of the leading features of this bill.

The Underlying Purpose of the Bill

The underlying purpose of the proposed legislation was the enactment of some broad, comprehensive, liberal practice act which would sufficiently protect the public from harm and yet give every

full grown person of full mental capacity, the opportunity, if he desired it, to be experimented on by the exploiters of new systems, thus giving such full grown persons the full benefit, as well as the necessary results of the "liberty of contract" so much insisted on. The proposed act also afforded the apostles of alleged new methods of healing an opportunity to demonstrate either the merit of their alleged system or the utter folly and viciousness of their boasts.

Non-Sectarian Bill

The act further sought to eliminate from the legal requirements of the practice of medicine all sectarianism, schools or systems of practice, and based such requirements entirely upon the educational and professional training and fitness of the applicant for admission to practice, and further gave everybody who had the necessary preliminary and professional education and training an opportunity to practice the healing art in any form he chose. If a person had the necessary educational qualifications demanded by the act, he might practice medicine or the art and science of health in any way he saw fit.

Equality of all Practitioners

Furthermore the act placed all practitioners, as far as legal authority to practice was concerned, upon an absolutely equal basis so that it could not justly be charged that any favoritism was shown for any particular system or school of practice. Operating under this act, if it had been adopted, the defense of persons prosecuted for violating the medical practice act that they could not obtain a license and hence legally follow their profession, even if they had the necessary qualifications because their special school or system of practice was not recognized by law, nor an examination therein permitted, was eliminated.

Preliminary and Professional Training Maintained

Coming to a few of the concrete provisions of the act, the existing standard requirements as to a preliminary education were maintained as were also the requirements of a professional training in a reputable scientific school or college. It will be noted that while the act had in view the giving of an opportunity to all persons to practice the healing art in any form, nevertheless it denied this opportunity to all who had not a general preliminary education sufficient to place them among persons who are considered fairly well educated. This requirement would eliminate at once that horde of drugless or other practitioners who have been recruited

from the alleys and byways of life. It was not proposed to submit the health and lives of the community to the bungling and ignorant mercy of the blacksmith, the lumber-jack or the roustabout.

Only Seven Essentials Required

The many subjects now provided by statute in which the Board of Examiners was to test the knowledge of the applicant, were reduced to the seven fundamentals, to-wit, anatomy, physiology, histology, pathology, chemistry, general diagnosis and hygiene. The important factor in determining whether a particular applicant for the practice of medicine is fitted therefor or not, is not the examination by any particular board of experts, but the general and especially, the professional training and education he has had. Hence under this new legislation boards of examiners would have had but seven subjects upon which to conduct examinations, such examinations being practically merely a corroboration of the educational record presented by the applicant, and not really the test of his fitness. It will at once appear from this that under such a statutory proceeding and regulation, the importance of medical colleges in preparing persons for the practice of medicine would be greatly enhanced, their scope of usefulness to the community greatly broadened, and their responsibility for furnishing correct, thorough and comprehensive instruction in the science of medicine and surgery greatly increased. To the like extent the importance of boards of examiners would be reduced, their duties lightened and their powers curtailed. A medical practice act like the one now under discussion would truly make the honest reputable medical college of the country the most important institutions of learning in the land and confer upon those engaged in giving instruction in these institutions a power for usefulness second to none offered by any other human endeavor.

Non-Licensed Persons Allowed to Practice

The most novel feature of the proposed act was the permitting of those who did not or could not secure licenses to practice medicine or the healing art under certain limitations. Such persons were permitted to practice their peculiar cult provided they displayed prominently upon all their advertisements, signs, cards, letter-heads, office door, or window circulars, or any literature used in connection with or with reference to their vocation the following words—"Not Licensed to Practice Medicine or Surgery in Wisconsin." This provision merely compels such unlicensed persons to practice what

they claim to be the healing art under true colors, something of which they could not legitimately complain.

Limitations upon such Practice

The act further provided that such unlicensed persons should treat or undertake to treat only persons of full age and of full mental capacity and compelled such persons to notify every individual before beginning any treatment that they are not licensed to practice medicine in Wisconsin. This was merely compelling these persons to tell their prospective patients just what and who they are. Such unlicensed persons were not permitted to treat any minors or any person mentally deficient, nor were they permitted to treat contagious or venereal diseases. Children and the incompetent are the special wards of the state, and therefore under the special protection of the state, and hence it would be unfair and even cruel to these wards to allow unlicensed practitioners to experiment upon them, experiments which no doubt in many, if not in all cases would be exceedingly dangerous. Contagious diseases also receive the special attention of the state because of the danger to the public that results if such diseases are not carefully supervised and proper preventive steps taken when discovered in any locality or found to exist in the case of an individual.

Duty Done and Penalties Inflicted

With the limitations upon the practice of unlicensed practitioners of the healing art just noted, it is considered that the state has done its full duty in protecting the public against the danger of the unskilled practice of medicine. If a full grown man or woman possessing all of their mental capacities desires to be treated for ailments not contagious, by persons who inform them that they have no license to practice medicine, then the state owes them no further duty and they ought to be at liberty to exercise the right of contract in this connection to their heart's content. The penalties imposed upon unlicensed practitioners were severe, not mere fines, but imprisonment for a long term. The object of imposing severe penalties was to prevent unlicensed person from going in their alleged practice beyond what the strict letter of the law allowed, because it has been the experience of the past that if you open the door but ever so slightly to the irregular practitioners of the healing art, they will soon insist not only upon the door being opened wide, but upon occupying the whole premises to the exclusion of everybody else.

Opposition to the Proposed Act

Of course, some opposition to the enactment of this bill existed even among medical practitioners, but it is not my purpose to discuss or consider these objections here. In passing, I desire to state that if there be any merit in the several or in any of the systems of healing now being exploited by persons who claim to have seen "a new light," then an opportunity ought to be given under such restrictions as to reduce the danger to the public to a negligible point, to demonstrate such merit. If there be no merit in their claims, such opportunity will soon demonstrate their falsity and their system will go down under the weight of their own error. If there be any merit in any of the systems of healing, no amount of legislative restriction or even prohibition, will prevent ultimately the adoption of so much of such systems as does possess merit.

Would be Effective in Eliminating Quackery

In my judgment, a medical practice act along the lines just discussed in the merest outline will solve the hitherto unsolved problem of eliminating the travelling and sedentary quack from longer pestering the community and imposing upon the unfortunate. Quackery shuns the day. Light kills it. If all of the charlatans were compelled to carry their proper label—and this compulsion could be easily enforced, they would soon scatter to the unknown parts as rapidly as rats desert a sinking ship. If such was the result, and I am satisfied that it would be, aside from the complete protection of the public thus secured, the medical profession would be immensely benefited, the respect of the community for the calling greatly increased and medical colleges who prepare the practitioners of the profession, would be greatly benefited in more ways than one.

Result of the Attempt

You no doubt may be interested to know what became of this bill. It was defeated. After I had secured the introduction of the proposed legislation, and it was referred to the appropriate committee, the hordes of unlicensed and unlicensable practitioners opened their mud batteries and bombarded the members of the legislature with the tons of protests. A train load of Christian Scientists came from Milwaukee to Madison on the day a public discussion was had before the joint committees of the two houses. This discussion lasted from two o'clock in the afternoon until eleven o'clock at night. A few of the leading medical men of Wisconsin

and myself presented our argument in favor of the proposed legislation and all that the opponents presented were mere protests, appeals for the right of the parent to give his children such treatment as he chose; abuse of the medical profession generally as a medical trust, and all the stock arguments or rather statements of the ignorant or vicious imposter. The League of medical Freedom had several representatives at the State Capital who remained there from the day this bill was introduced until it was finally defeated and were on the ground every day the Legislature was in session. Upon the desk of every legislator were at least two hundred letters, signed by Christian Scientists from all over the state, protesting against the enactment of the proposed legislation. The result was quite inevitable. Legislators are generally politicians who are "afraid of the cars," especially of the political cars.

The Fight Continues

Nevertheless I have not given up the fight. So convinced am I that the lines along which this bill was drawn are the correct ones and that the trail now partially blazed will lead to a correct solution of effective, reasonable and just medical regulation that I have entered upon a campaign of education during the current year while no Legislature is in session and will see to it that a similar bill is introduced into the next Legislature. I have thought it fit and proper to submit the general outlines of this act to you men who are intersted in medical education, for the purpose that you may consider the same and study the question, and whether you agree with me or not, I will be more than pleased to receive your views on this very important subject.

Conclusion

Returning to a direct discussion of the subject matter of this paper, and in conclusion, the relative duties and rights of medical colleges and state boards of examiners may be epitomized into the following propositions :

First: The reputability of a medical college is determined by the statutory definitions of the various states, and unless the acts containing these definitions have been declared unconstitutional, medical colleges must meet those definitions in order to be recognized as reputable.

Second: Such statutory definitions of reputability cannot be modified by rules, regulations or interpretations of state boards of examiners to the prejudice of any medical college.

Third: When statutes grant boards of examiners power to adopt rules and standards of reputability, such rules and standards must be clearly reasonable, that is, the enforcement of such rules and standards must clearly promote the protection of the public.

Fourth: If such rules and standards so adopted by boards of examiners do not clearly tend to the protection of the public, they will be condemned by the courts as discriminatory and hence not enforceable.

Fifth: Medical colleges have a legal right to matriculate any person who desires to study medicine, even though deficient in preliminary education, provided such person is not granted a diploma as a badge of fitness for the practice of medicine.

Sixth: The internal, and especially the business, affairs of a privately owned medical college cannot be controlled or supervised by boards of examiners.

Seventh: When a medical college has honestly complied with the spirit of the statutory and reasonable broad-made rules and regulations, any further attempt to enforce technical and fine-spur requirements will be defeated by the courts, when resisted.

Eighth: The law does not recognize any particular school or system of practice as the standard of the practice of medicine, and courts will not tolerate for a moment any discrimination, if proven, against any recognized school or system on the part of any board of examiners.

Ninth: Some day—may it be in the near future—some simple medical practice code, preferably a federal act, will be adopted under the provisions of which boards of examiners will test applicants, thoroughly trained generally and professionally, only in the fundamentals of the science, schools and systems will not be legally recognized or even considered, and the graduates of any honest medical college will be on a footing of absolute equality with the graduates of all other honest medical colleges.—*The North American Journal of Homœopathy*, April, 1914.

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PSYCHOTHERAPY.

BY JOHN HUDSON STORER, A.B., M.D.

Psychotherapeutics, or mental healing, or the mental treatment of functional nervous disorders, is a subject which sooner or later physicians must recognize and take into consideration. Traces of psychotherapy are to be found almost as far back as history extends, and it is today being practised very extensively under different names and by different cults. By psychotherapy we do not mean faith cure, hypnotism, magic, christian science or any cult or particular sort of mental healing with which the world has been drugged; but it includes any legitimate way of curing the sick by mental, moral or spiritual methods, which we can use and not be ashamed of and which contains no elements of fraud. This result may be accomplished by "suggestion" and "auto-suggestion." There is a decided difference between these two terms.

By suggestion we mean accomplishing something for somebody by the power or influence of one mind over another; by his believing that something is being done for him; and, as Dr. Cabot says. "Getting an idea into a person's mind by the back door, so that he is not conscious of its entry and does not know how it got there."

I believe that the secret of the success of our extreme high-potency friends in curing diseases, although unknown to themselves, lies really in the power of suggestion. How many down in their hearts believe that one dose of the one hundred thousandth potency given once a week, or a smell from Hahnemann's medicine bottle, ever brought about a change in the metabolism of the brain or body of anyone or cured any functional or organic disease? You often give a placebo and get results. Why? Because the patient expects you to prescribe for him and you have to do it. You ask the patient a number of questions, go over every symptom very carefully, take considerable time and make him believe you are giving extreme care and thought to his case, and then you prepare your prescription with pains-taking precision and give him explicit directions as to how it should be taken. By this time your patient's mind is in a most impressionable and receptive condition. You have convinced him that you are giving him a medicine that will surely cure him, and his faith in you has practically effected a cure.

I have in mind the case of a lady who had periodical headaches lasting two or three days at a time. She felt one of these coming on and called me. I explained her case and impressed her with the fact that I had a new remedy which was a positive cure for just such headaches. After considerable explanation and careful preparation of the bread pill, I instructed her to take one on the platform of the Elevated Railroad at 135th Street, and told her that when she reached her destination at 18th Street her headache would be gone. The next day she returned for a quantity of those pills, saying that they worked exactly as I told her they would and she considered them nothing short of marvelous. This was simply suggestion, or, in other words, the influence of one mind over another. I believe this sort of thing is dishonest and should not be practised, but the high-potency doctor escapes this conscience-stricken state of mind through believing that what he prescribes will and does actually accomplish a cure. But it is really suggestion, because one mind works on another mind, not only by mental effect but by material though inert substance.

Another case of suggestion is that of the village blacksmith whose red flannel undershirt keeps him from taking cold and having rheumatism. As far as the shirt is concerned, white is just as good as red; yet if the blacksmith put on a white flannel shirt of the same quality and thickness, he would without doubt be in bed with rheumatism in less than a week, believing that there is efficiency in the color red.

By auto-suggestion or self-suggestion we mean the power of one mind over another to make that other mind do something for itself; or, in other words, "thought displacement." By that is meant, removing one thought or train of thoughts and replacing it with another of an entirely different character. Much of our sickness is due not so much to functional disorders of the body as to functional disorders of the brain; or, in other words, we are often sick because we think we are. How many times has a patient come to you actually sick with a pain in the left side of the chest and morally certain that he has heart disease, and how quickly has he recovered when, after a careful examination, you assure him that his heart is perfectly sound. While, if that same pain had been in his head or his heel, he would never have thought of being sick or going to a doctor.

Cabot says, "When one has a pain or any kind of suffering, there are always two elements in that suffering: the thing itself and what one thinks of it." For, while it often happens that the pain is bad, many times what one thinks of it makes it worse.

I believe we frequently make mistakes by telling our patients not to think. We want them to think, but we do not want them to worry, which is an entirely different state of mind. For instance, insomnia. We want them to think that lying awake nights will not hurt them, but we do not want them to worry for fear they will die or go crazy if they do not sleep. I recall the case of a patient coming to me recently in a highly excited state of mind, although in good physical condition, who wanted to know how long he could live without sleep. He said he was

almost crazy and he knew he could not live long because he had not had a night's sleep for some time. This was a good case for auto-suggestion. I talked with him at length and assured him the reason he did not sleep was because his system did not require it, and that many people do not sleep much; that Thomas A. Edison says he never takes over four hours sleep a night and no one needs more than that. I told my patient that no one ever went crazy and no one ever died from insomnia; that to lie awake and worry when he had a nice, comfortable bed to lie in, was most ungrateful; and that, when his body needed sleep, nature would come to the rescue and give it to him, and for him to go home and stop worrying. His whole bearing changed and he became cheerful. He left my office laughing and joking and that night slept like a baby. In other words, his mental worry was changed to mental calm.

These and many similar conditions the busy physician can and should take care of, but there is a class of chronic cause called neurasthenics, or those suffering from neurasthenia, that he cannot or will not spend the necessary time to deal properly with or to accomplish a cure of; and there is and always will be certain class of people who want to follow some sort of mysterious doctrine or new theory for both their souls' and their bodies' welfare. It is such cases and such people who eagerly adopt New Thought, for instance, and Christian Science. New Thought belief claims over one million followers and Christian Science three million, while other similar cults a million or more. Looking further, we see that there are five or six million adults, and when we add the children we find that there are ten million or more people in the United States who should be our patients, but are not, chiefly because we either do not give them sufficient time or the kind of treatment they require or do not send them to those who can. These cults are too strong, and apparently accomplish too many cures, for us to ignore them any longer, and the question that confronts us is, What are we going to do about it? There are two aspects to this situation, two duties which we have to perform. In the first place, those ten million

followers of Christian Science and other cults mean just ten million less patients for the regular practitioners of medicine, and we must, for our own good, endeavor to get them back or at least to prevent new converts. Secondly, we must take a broader and more unselfish view, and, for their own sakes, try to reclaim those ten million souls to the right way of living, morally, physically and spiritually. We must also bear in mind that most of the cults, dogmas or doctrines to which they adhere are in reality medical, but clothed with a spiritual mantle, and that being the case we must co-operate with the Church in bringing the spiritual element into our work.

Now, the basis for the practice of Christian Science, New Thought treatment and various similar beliefs, is treatment by hypnosis and suggestion; and the basis of treatment by hypnosis and suggestion is the acquaintance of one's patients by personal conversation. Through personal conversation we instill in them a desire for analysis of their own mental condition, thus switching them from fear of the physical to the creation of an interest in their mental condition. Physical diseases create and are aggravated by mental fear and unrest; hence, by removing the latter, we obtain a salutary effect on the former. Fear, moreover, creates a desire for suggestion and a general mental dependence upon others; and this condition opens the door to the physician or to the healer, allowing him to educate his patients to practice mental synthesis, to give them confidence in themselves and enable them to fight against imaginary mental foes, to be their own masters, and hence to banish the stalking pathological wild beast roaming about in their mentality and causing reflex diseases in their physical anatomy.

Obviously, whereas pathological conditions can scarcely be changed by these means, yet neurotic conditions which exist alone may be cured, for disease without physical foundation has no reason for existence, and where neurotic condition exist in conjunction with pathological conditions, the cure of the former does doubtless have a beneficial effect on the latter. Nervousness and so-called nervous diseases, which consist of neurasthenia,

hysteria and the lighter forms of hypochondria, are purely functional conditions and consequently usually psychic; and psychic diseases require psychic treatment. Hence the cures effected by Christian Science, New Thought treatment, etc.

The great and chief underlying doctrine of Christian Science is, however, that people are sick because they think they are, irrespective of their ailments, whether organic or functional. Christian Scientists absolutely ignore diagnosis and absolutely oppose not only physicians but the Christian Church; and those are the two great reasons why we cannot unite with them or aid them or be aided by them. I do not wish to be understood as believing that Christian Science accomplishes no good; on the contrary I believe it does; but I want the good it does to be done through legitimate channels, with the bad part eliminated.

But just how are we going to combat this condition, and with what weapons shall we exterminate this growing false doctrine? And how shall we treat that great number of patients who require more time and attention and, perhaps, a different kind of treatment from that which we can or are expected to give, and at the same time keep in touch with them so that when organic diseases arise we shall have them as patients?

In my opinion, psychotherapy is the only alternative and the only means that the legitimate physician can advise with dignity and for his own protection, because no true psychotherapist claims that organic diseases can be cured by suggestion or auto-suggestion alone, unaided by a physician's diagnosis or a physician's or surgeon's remedies, for in these cases psychotherapy can only play a part in the patient's recovery, by removing fear and worry, especially in cases where hypnotics might be harmful.

In Europe psychotherapies are wholly in the hands of physicians, but in America we have not hesitated to associate the man of science with the man of religion—doctor and minister—in a most favorable form of co-operation for the good of the sick and the suffering. At present physicians are but amateurs in the art of mental healing, the clergy alone have given it serious

study, as for instance, the Emanuel movement according to the method of Dr. Worcester of Boston. Shall this condition continue or shall the teaching of scientific mental healing be added to our college curriculum? American universities and medical schools are far behind those of the rest of the world in their provisions for instruction in this subject. In Italy and Germany especially, every university has its psychiatric clinic in which its professor of psychiatry teaches students how to recognize and treat mental phenomena which deviate from the normal.

It cannot be too firmly kept in mind that no one is really competent to practice psychotherapy unless he is thoroughly acquainted with the laws of suggestion and dissociation as revealed by the psychopathologists and has undergone a careful training in methods of psychical diagnosis. Otherwise he can proceed only in a bungling, haphazard way, and with the best intentions in the world is certain to make serious mistakes.

Moreover, beyond and above all this, psychotherapy has emphasized and brought to the attention of the scientific world a truth that has been more or less neglected, especially by physicians and other men of science, namely: that man is something more than a mere collection of molecules and atoms; something more than a mere machine. He is all of this, of course, but in addition possesses a higher nature, however we may define it, which we call spiritual. The laws governing this side of his nature are not nearly so well known as those controlling his material being. But, notwithstanding the evidences of its existence are too many and too manifest to allow any thinking man to ignore it entirely. Man is a complex being. He is neither mere matter nor pure spirit, but a combination of both. Any system of therapeutics that attempts to treat him as wholly one or the other is certain, in many cases, to fail of the highest results. This mistake is made by many physicians on the one hand and by many faith curists and mind healers on the other. To be sure, there are doubtless instances where the ailment is so predominantly physical that mere material means alone effect a cure; as there are others so evidently mental that spiritual

means alone are effective. But there are also many cases, perhaps the great majority, on the border land—ailments partly physical and partly mental—and to treat these effectively both sides of man's nature must be ministered to.

It is in just such cases that psychotherapy is of inestimable value. With no animus against the man of science, but rather a cordial desire to welcome and co-operate with him, psychotherapists stand firmly for whatever element of truth there may be in Christian Science or any other of these cults, and at the same time endeavor to hold the two views in proper balance, to do justice to both parties. Better still, to cause to cease the present destructive and unseemly strife and make both work together for the amelioration of the ills that flesh is heir to and the upbuilding and improvement of the whole man, body, mind and spirit.—*The North American Journal of Homœopathy*, March, 1914.

CLINICAL EXPERIENCES WITH THE NOWELL CANCER SERUM.

BY M. J. ADAMS, M.D.

My Attention was first directed toward Dr. Nowell's serum a little over a year ago by reading an article in one of the journals which gave but a brief resume of its possibilities. I had under my care at that time a case of carcinoma of the abdomen. This patient had revealed carcinoma of such size and intimate attachment with the viscera in the abdomen that its removal was found impossible. I communicated these facts to the patient's husband and told him of the positive outcome. At this time the referred-to article came into my hands. Talking the contents of the article over with Mr. F. we journeyed at once to Boston and induced Dr. Nowell to come to New Haven, and the results of his coming, together with the history of the case, I will now try and give you.

Mrs. F., a married woman, age 46, rather dark complexion, family history good, with exception that one sister, who had died sixteen years previous with cancer of uterus. Father and mother both lived to be over seventy. Patient had never had children, and in fact had never been pregnant so far as I know.

She came to me some two years previous for treatment for what she called acute indigestion. This attack simulated gall-stones most thoroughly, coming on suddenly, pain in the "pit" of stomach, followed by vomiting, great tenderness over stomach extending to the right side of the liver, and referred to the back between the shoulders. This attack was of short duration and she was herself again in the course of two or three days, but was careful in her diet for quite some time. About two months after the first attack she came again, seeking relief from the same set of symptoms, with about the same result, i.e., she was relieved in a short time and in a few days was quite normal again.

These attacks continued until January, 1913, at from six weeks to two months intervals, and a positive diagnosis of gall-stones was made by me, with the advice that operative measures

should be resorted to. This she was loath to submit to, and not until the last attack in January, 1913, would she consider such procedure. On January 1st I was sent for, and found the patient sitting up in bed having the most excruciating pain in the stomach, radiating over the right side and extending through the back, with severe vomiting. This attack was much more severe than any she had had previously. I gave her remedies, with no effect, as she would vomit them almost as soon as taken. I was driven to giving her 1·4 grain of morphine and this relieved her but very little, and I proceeded to repeat the dose in about twenty minutes, followed by another in a short half hour. I do not think I ever saw any one suffer more pain than she did for about one hour. She was quite some better for the next few days but pain was more or less constant. Jaundice was an increasing symptom.

At my suggestion, we had Dr. William H. Bishop of New York City come up for consultation, and after giving the case most careful consideration, he pronounced it gallstones, and advised immediate operation. She was transferred to a sanitarium and was operated upon by me January 15th, with Dr. Bishop present, and we found a perfectly normal gall bladder but a carcinoma extending from the left side of the median line to the right, surrounding the omentum and colon, duodenum and common duct with adhesions in all directions. These adhesions we liberated as much as possible, but the carcinoma involved so much it was absolutely unremovable. Taking a section, for microscopical examination, we closed the wound and told her husband she had but a few weeks to live. She made a good recovery from the operation, but it was with great difficulty that the bowels were induced to move, and they had to be watched constantly, on account of great distension, with gases and consequently much physical discomfort. These symptoms increased gradually.

June 21st, Dr. Nowell came and gave her her first injection. This was administered in the back, and in the course of twelve hours she had a decided reaction, considerable swelling and in-

duration, temperature 101, pulse 110. The symptoms gradually subsided and in forty-eight hours had practically disappeared. On June 25th she received her second injection in the right arm and the reaction was more severe than the previous one but lasted about the same length of time. July 1st she received the third injection and the reaction was very pronounced indeed, both locally and physically; but after it subsided the patient began feeling better, and took more nourishment and the gases in the bowels were less troublesome. July 8th the fourth injection was given, with about the same reaction as was the one on July 1st, but her health was constantly improving. July 22nd the fifth injection was given with considerable local swelling, some rise in temperature, but reaction not as marked as in the two previous injections. August 4th she received the sixth injection and the reaction was very slight indeed, in fact hardly noticeable, and the seventh and last one was given August 29th, with no perceptible reaction. From then on to the present time she has been perfectly well, eating anything she desires, and enjoying as far as one can see, perfect health. The bowels are perfectly normal, and her flesh and strength have fully returned. No tumor is noticeable by palpation.

Another case, Mr. E., carcinoma of pylorus, complete stenosis, so that food taken into the stomach for breakfast would be vomited at night but slightly changed. Emaciation, cachexia, and rapidly failing health. In September, 1913, a gastro-enterostomy was done, with much relief, but after a number of weeks he began having more pain, gradual failing health and weakness. In December he received his first injection, with not much reaction, but three weeks later, after the second injection there was marked reaction; also following the third. His strength began to return and he has now had four injections, and is doing considerable work around his farm. He seems to be gaining gradually but constantly. Of course, he is under observation now and should have treatments until reactions cease. I have under treatment at the present time six other cases, two postoperative carcinoma of breast, one carcinoma of rectum, one

of stomach, and one carcinoma of abdomen, where colostomy was obliged to be done for relief.

We cannot tell what the ultimate outcome of these will be, but I can honestly state they are all doing well, and all seem to be improving.

It seems to me that Dr. Nowell has given to the profession and to a large mass of unfortunate human beings a possible chance for the recovery of health where only failure confronted us before.—*The North American Journal of Homœopathy*, July 1914.

PERNICIOUS VOMITING OF PREGNANCY.

BY RALPH J. YEATON, M.D.

Mr. Chairman and Doctors:—

I have the history and treatment of but one case to present, so have reviewed the more recent literature on this subject, simply to recall to your minds cases forgotten and experiences passed through. In doing this, there is a hope of stimulating discussion which will produce suggestions and recommendations regarding medicinal and suggestive treatment, or induced abortion; when should it be done and how long to wait. Apparently here is a wide field for discretion and experience.

Etiology.—Most authors classify this subject at present under the general heading, “Toxemias of Pregnancy.” The vast amount of literature accumulated proves the condition is not dependent upon a single aetiological factor. Some cases are closely allied to hysteria, belief for this being such are often cured by suggestion and moral suasion. Neurosis has been clearly demonstrated. According to Pick occurrence is one in 1,000 cases of pregnancy.

The more prominent factors in the causation might be classified: 1. Reflex from genitalia, as reflex irritation in certain abnormalities of generative tract, as in cancer, retroflexed uterus, deep cervical tears, endometritis, inflammatory processes more or less affecting the tubes and ovaries, especially with adhesions; hydramnios, etc.

2. Disease of stomach and abdominal disorders, as ulcer and tubercular lesions.

3. Nervous system.

4. General metabolism disturbed, clinical picture of toxæmia. Some express belief that intestinal auto-intoxication causes the vomiting.

The liver has a lot to do with the condition. The changes in it have been just lately studied, changes probably due to a basal cause of toxæmia. One author speaks of the “liver, of preg-

nancy" as being related to the "kidney of pregnancy." This condition has been laid to the thyroid, adrenals and defective corpus luteum. It is interesting to note in passing that it is believed that Charlotte Brontë died of this condition and also that abortion was first induced in 1813.

Pathology.—One observer, writing in 1886, states there are no pathological changes. Of late years the condition is attributed to toxæmia of pregnancy for autopsy shows lesions of liver, kidney and other organs identical with those in eclampsia. The liver, often larger or smaller, shows a diffuse hemorrhagic hepatitis with all the findings characteristic of acute yellow atrophy. Thrombosis, fatty degeneration and bile stasis may be present. The kidney shows all changes from so-called kidney of pregnancy to acute parenchymatous nephritis.

Symptoms.—This condition rarely begins suddenly. At first it follows the simple form of vomiting of pregnancy. Nothing characteristic at first. Time of commencing variable. One author records 43 cases in which the vomiting first appeared—9 first two weeks, 15 first month, 9 first and second months, 5 second and third months, and so on to 2 in sixth and seventh month. During the illness the urine may show small quantity increased sp. grav. urea increased even to four per cent, acetone, indican, bile pigments, albumen, blood and urobilinogen and sugar.

The patient vomits very frequently, and vomits all or nearly all food and drink, the smallest quantity often is sufficient to excite emesis. There is usually no appetite, even going to an aversion to food. The regurgitation occurs constantly during the 24 hours, day and night, preventing sleep. Abdominal pain, especially about edge of ribs and pelvis, mostly located in the muscles, which are sensitive to touch. During this stage also appear signs of insufficient nutrition, emaciation, debility, certain accessory phenomena, drawn face, slightly jaundiced skin and conjunctiva, pyralism and usually little or no fever.

Later Stage.—Most all previously mentioned symptoms are aggravated. Temperature is slightly elevated, pulse usually in

proportion, mucous membrane becomes dry. Great thirst, breath acid and fetid, odor very plain in the room.

Final Stage.—Vomiting is less in quality and frequency, a calmness that is apt to be deceitful, the temperature rises, syncope apt to occur, also cerebral symptoms, neuralgic pains, disorder of sight and hearing, strabismus very often, delirium coma and death is generally inevitable.

One must first decide when the vomiting becomes serious enough to be pernicious. It seems proper that when the stomach rejects all, and there is complete evorexia and the general health is affected, one may or must conclude physiologic vomiting has passed into the pathologic.

Diagnosis.—The diagnosis is not easy, for one must diagnose pregnancy in the first two or three months of its duration. The determining cause of vomiting, basal and adjuvant must be sought. There must be a differentiation of vomiting due to or rendered pernicious by pregnancy from vomiting having no connection with existing pregnancy such as will occur in the absence of pregnancy. That the diagnosis is not always easy is proven by recorded mistakes, as made by Trousseau when after induction of abortion autopsy showed cancer of the stomach. Another of Caseaux of the tubercular peritonitis, and of Beau, tubercular meningitis. Morgan, of Chicago, relates a case in which a girl who in extremis from emesis, threw up a ball of cotton, swallowed to produce abortion.

Prognosis.—Statistics differ and are all uncertain, because ideas of observers differ as to what constitutes hyperemesis. One records: 118 cases with 46 deaths. Another states: Is a most serious condition, ends fatally in 50 per cent subjected to purely medicinal treatment. Another: When temperature goes up, death usually results, no matter what treatment has been employed. Most agree condition is more frequent and more fatal in multipara. One observer (Carl Braun) states he has seen 150,000 cases of pregnancy, yet never saw a fatal hyperemesis; yet McClintock easily collected records of 50 fatal cases.

Treatment.—The treatment of these cases according to most observers falls into about four general divisions: (1) Medicinal, (2) Suggestive, (3) Gynecological, (4) Obstetrical.

Medicinal.—Homœopathic medication, any drug from aconite to zinc. Hamlin especially commends ant. crud., ars. alb., bell., bry., cocculus, conium, cup. ars., gossypium, ignatia, ipicac, kali bich., nat mur., nux vom., phos., puls., sepia, sulph., verat., alb. Cocaine, iodine, hlc., chloral, bromides, antipyrine, codein and morphine are some recommended by our other friends. They classify their medicinal treatment as follows: 1. Local anaesthetics, 2 Mechanical drugs, 3 Motor depressants, 4 External remedies. Stomach washing also is of use. Amongst the latest remedies recommended are suprarenal extract by Retandi, 1909, and serum of healthy pregnant women, by Freund, 1909, and Mayer, 1911, to stimulate the anti bodies. Most of these seem to have had some little success.

Suggestive.—Pure neurosis: rest in bed, avoidance of excitement, moral suasion, verbal painting of horrible picture to patient of abortion and its results.

Vitality has often been maintained by nutritive rectal enemata and thirst relieved by high retentive saline rectal injections.

Gynecological.—Knee chest position to admit air into the vagina. Painting the cervix with carbolic acid and glycerine, with silver nitrate (Vins), belladonna, iodine, and small or slight dilatation of the cervix: this the last before an abortion.

Obstetrical.—Unfortunately, many times, most of the means used will be of no avail, the condition will steadily become more severe and the uterus will have to be emptied to save or in the hope of saving life. This should be done before condition becomes desperate. Here arises a delicate point—when to empty the uterus. Experience, discretion and literature must all be called into play. You may wait too long, then death will follow, even though the uterus were emptied. The uterus may be emptied and for some time it may be believed that the original condition might have been continued. How long to wait is the

important feature, especially when you know that therapeutic abortion will cure most cases if performed early enough. Williams advises, therefore, to empty the uterus as soon as vomiting is pronounced. The toxemia deserves serious consideration. Hofbauer says: "If glycosuria results after ingestion of two ounces levulose, a test of the glycolytic power of the organ (liver) is at hand, because this proves that the liver is attacked, and has begun to suffer." Pinaro says: "Empty the uterus when the pulse is over 100." Another observer: "Presence of urobilinogen in the urine, as determined by "Ehrlich's aldehyde test" (para-dimethyl-amino-benzaldehyd Hcl-H₂O-C₂-H₅OH) is cause for the emptying the uterus." This first and last are simple tests.

Outline of Patient's History and Treatment.

During April, 1914, I was called to visit a Mrs. S., 29 years of age, married. Her condition: slight yellowish hue to her skin and eyes, slight general dull headache, very whitish coated tongue, constant nausea, vomiting about once every half hour; stated that she had been in that same condition for a week. Believing her liver and intestinal canal contained the causal conditions, diet and therapeutic measures tending toward amelioration were employed. Her condition during the next two days was slightly aggravated. She had been on a sofa most of the time, but now had to take to her bed. The patient suggested on the third day she believed condition was due to pregnancy. Although her last menstrual flow appeared at the proper time, she stated it was not so profuse as usual. Bimanual examination gave a slight enlargement to the antero-posterior fundus, (which Williams states, occurring at any time during the child-bearing period should be regarded as presumptive evidence of pregnancy until such a possibility has been conclusively eliminated); a soft, doughy feeling, especially the lower segment of the uterus, almost a Hagar's sign. The lower part of the vagina showed the typical hue described by Chadwick. No abdominal enlargement. I asked the patient why she suspected pregnancy then obtained this history:

Age 29, husband is 57; has had three full term labors, normal labors, then one self-induced miscarriage by a catheter; then one full term normal labor. One six months' premature labor followed this, later two miscarriages. Thereafter her uterine had an 18 months' vacation till this present pregnancy. A little more detail about her six months' premature labor: She says she began to vomit at her seventh week, it kept up until delivery. That vomiting was the same as this vomiting, except lighter. Was treated at home, then went to a hospital, was treated dietically and medicinally and stomach was washed; modified her symptoms so that nausea was present all the time vomiting only when erect; lost 20 pounds in weight; came home, was there two months when she was delivered; child lived but a short time. Therefore when this present vomiting continued over such a long period, she suspected pregnancy. Peculiar, this vomiting began with air-hunger.

The fourth day, Mrs. S. was given tablets containing cocaine. Apparently no effect. That evening a hypodermic of morphine sulph. gr. 1-3. Mrs. S. was drowsy for three hours and vomited about hourly only. The fifth day her temperature began to go up, reached 101, salivated, offensive, heavy odor in the room, traced to her breath. Blood began to appear in streaks in the vomitus. Pulse 130. Extreme thirst, no relief by retentive salines. As Mrs. S. vomited every teaspoonful of medication, and even tablets, she received a hypodermic of morph. gr. 1-2. Very little effect was noticed.

Sixth day. Out patient's picture: Urine from night before, sp. grav. 1030. Very concentrated acetone bile pigments, did not think to try urea. Vomiting day and night at frequent intervals, very little sleep, no nourishment, as nothing, not even a teaspoonful of water remained in her stomach. Temperature 105.5; pulse 130. Conjunctiva very yellowish. Skin pronounced yellowish hue. Physically very weak. Hoarse. Vomitus light, glairy mucous, streaked with blood at intervals. Intense soreness over entire abdomen, probably due to vomiting, as was also her relaxed palate. Did not retain enemata. Fecal matter

light at times, at other times normal in color. Salivation and peculiar, offensive, heavy odor to her breath. No particular taste to the ejected material now, though very bitter at first. Very thirsty, lips and tongue dry. Vomiting had now continued 13 days. Believed by examination and history that we had a case of pregnancy and particularly pernicious vomiting of pregnancy with which to deal, as examination failed to reveal any other causal condition. Consent was obtained and under anaesthesia her uterus was curetted; found, judging by material removed, a 6-8 weeks pregnant uterus. Nausea stopped in 12 hours. Patient has made an uneventful recovery since, although her color did not become normal until nine days after curettage. Mrs. S. now is in apparently good condition, except it has not regained her usual strength.—*The North American Journal of Homæopathy*, July, 1914.

EDITOR'S NOTES.

The Pituitary Body in Health and Disease.

The evolution of our knowledge in regard to the functions of the various parts of the pituitary body, and the effects of their derangement in disease, affords one of the most interesting chapters in modern experimental medicine. This structure regarded for long as of little importance, if not actually vestigial in character, practically first received serious recognition from the acute observations of MARIE in 1886 in regard to acromegaly. Even after them, however, but little attention was paid to the possible activities of the pituitary body until the impetus given to the investigation of the ductless glands by the discovery of the internal secretions associated with some of them. Since the beginning of the present century a considerable literature, both on the experimental and clinico-pathological aspects of the pituitary functions, has arisen, and as a consequence our nosology has been increased by the differentiation of certain clearly defined diseases, and our therapeutics enriched by a valuable and powerful agent—pituitary extract.

The anatomy and histology of the gland have been studied with great care and with practical result. Clearly it consists of two portions, of different embryological origin, an anterior glandular lobe, derived from the pouch of Rathke, and a posterior or nervous lobe formed from a downgrowth of the neuroblast of the midbrain. The glandular portion is divided into two—the pars anterior proper, which is by far the larger, and a smaller paler zone, called the pars intermedia, which forms an investment to the posterior lobe, from which it cannot be separated. It is also worthy of note that embryonic “rests” of hypophysial tissue are frequently to be found in the pharynx and base of the skull, which may possibly assist in carrying on the activities of the pituitary body, when it is diseased or injured in experiment. The complex relationship of the two parts of the gland to one another has rendered the actual differentiation of the special functions of each a matter of great

difficulty, and even at the present time it can hardly be said to be complete. It appears to be definitely established that the anterior lobe is essential to life, since its complete removal results in death preceded by a train of symptoms to which the name of cachexia hypophysiopriva has been applied. Partial removal or disease of this structure results, according to CROWE, HARVEY CUSHING, and HOMANS, in a peculiar state of adiposity, with persistent infantilism in young animals or with retrogressive changes in the generative organs in adults. Conditions of polyuria, glycosuria, hypotrichosis, and œdema of the skin, with subnormal temperature and mental changes, are also common. Ablation experiments indicate that the posterior lobe is less essential to life, but show that it plays an important part in the utilisation of sugar in the organism, since after its removal a temporary lowering in the tolerance for sugars is followed by a lasting increase. The study of extracts of the gland, first started by SCHAFER and OLIVER in 1895, has yielded the surprising result that it is from the posterior lobe, with its smaller and relatively simple and indifferent structure, that the active extracts are obtained. The separation of pituitrin and the discovery of its important effects in raising blood pressure, slowing the pulse, inducing diuresis, stimulating the mammary glands, and increasing uterine contractions are now matters of common knowledge and experience. It is generally supposed that the active substance is elaborated in the pars intermedia, and it is suggested by HERRING that it passes into the posterior lobe and thence into the ventricles of the brain. As in the case of the other glands with internal secretions, it would appear that disturbances of the functions of the pituitary body may lead to associated alterations in other secretory structures, and some authorities have endeavoured to establish polyglandular syndromes as a result. It is clear that the pituitary body and the testes and ovaries are intimately associated, and histological changes in the interstitial cells of Leydig in the testes have been demonstrated after partial hypophysectomy. There is a good deal of evidence that the thyroid gland and the pituitary act synergically, and that each may to some extent act vicariously.

ly for the other, as Dr. R. G. HOSKINS has rather happily expressed it.

The results of disease of the pituitary body are, as might have been anticipated from its complex structure and important functions, of varying and far-reaching character. At first, on the analogy of thyroid disease, it was customary to differentiate conditions of over-activity or hyperpituitarism and those characterised by defective function or hypopituitarism. It soon became clear, however, that there were conditions which did not fall into either of these groups, owing to the fact that one part of the pituitary may be alone involved, or that by enlargement with over-activity it may interfere with the functions of the other part. For such conditions the term of dyspituitarism has been introduced. The matter is complicated, as has been so brilliantly demonstrated by HARVEY CUSHING and his co-workser, by what have been referred to as "neighbourhood symptoms"—that is, by the effects of increased intracranial pressure, and by the secondary effects upon other glandular structures. We publish in this week's issue of *THE LANCET* two interesting papers which illustrate the complexity and importance of pituitary disease and indicate that some of its forms may be less uncommon than is generally supposed. Dr. E. G. FEARNSIDES gives details of a dozen cases which have come under his notice, and the tables which are appended to his paper afford a valuable record of the varied symptoms which he has investigated in order to establish the diagnosis of pituitary disease. It will be seen from these that he has carefully examined the patients for those symptoms which might be expected to be present in derangements of the pituitary body in the light of our knowledge of its functions from physiological experiments. Consequently these tables are of considerable interest, although they are secondary to the main thesis of the paper, which is to establish the effects of pituitary disease upon the shape of the sella turcica and the diagnostic value of X ray examination of the base of the skull, Dr. FEARNSIDES concludes that in doubtful cases a change in the

size or shape of the sella turcica, as seen in the X ray plate, is at present the most certain evidence of pituitary disorder, and for this purpose he states the actual measurements of the pituitary fossa as given by Professor ARTHUR KEITH, and the measurements in profile radiograms which may be regarded as abnormal according to Professor HARVEY CUSHING. The second paper is that by Dr. W. JOHNSON on a pathological investigation of four cases of pituitary tumour observed at Guy's Hospital. All four of these cases appear to have been cases of primary malignant disease of the pituitary body, and in only one was there any secondary growth. The growths presented peculiar and somewhat characteristic features, and were in most of the cases cystic. In one of them the ocular condition and the fields of vision were most carefully investigated by Mr. H. L. EASON, who has described the case fully in an interesting clinical lecture published in the *Guy's Hospital Gazette* of June 20th. There was complete temporal hemianopia, which occurs so frequently in pituitary tumours from the pressure of the growth upon the central part of the optic chiasma. Reproductions of the perimeter charts are given with Dr. JOHNSON's paper.

It not infrequently happens that the detailed examination of a pathological condition by skilled observers throws light upon physiological conditions. The particular case of Dr. JOHNSON to which we have just referred affords an instance in illustration. The growth occupied the interpeduncular space completely and had broken through the optic chiasma in such a way that the right and left optic nerves appeared to be the direct continuations of their respective tracts—in other words, the fibres crossing at the chiasma were broken through. Fortunately, Mr. EASON's observations were available to show that the temporal halves of the fields of vision corresponding to the nasal halves of the two retinæ were affected. Dr. JOHNSON availed himself of the opportunity offered of tracing the visual fibres backwards into the brain by studying the degenerations present. He found that the uncrossed fibres—that is, those

that were not degenerated—occupied the outer and lower portions of the optic tract. This he confirmed by examination of one of the other cases. He also found that the degeneration was confined to the optic tract and ceased at the primary optic ganglia in the external geniculate body and the pulvinar. No degeneration could be discovered in the optic radiations or in fibres entering the calcarine cortex, thus negating the statement that has been made that certain fibres pass directly to the occipital cortex without relays in the primary optic ganglia. We can commend both these papers to our readers as interesting, instructive, and suggestive.—*The Lancet*, July 4, 1914. *

Needed—A New Human Race.

A Eugenics Registry Office is needed to establish a race of human thoroughbreds. It only takes four generations to make a thoroughbred when the principles of eugenics have a fair chance to operate. Intelligent men and women everywhere throughout the civilized world are becoming aroused to the race significance of these great biologic laws, and are anxious to become informed in relation to eugenics and euthenics, and to conform their lives to the principles of physiologic and biologic righteousness.—*The Journal of the American Institute of Homoeopathy*, July, 1914.

Salvarsan in Trouble Again.

On the heels of the Los Angeles disaster comes the report in the Berlin Letter to the *Lancet* that Dr. Dreuw, a police surgeon, had asked the Imperial Health Officer to inquire into Salvarsan, as there had been hundreds of deaths from it. The matter finally got into the Reichstag, where official reply was made that as there was no compulsory notification of death from Salvarsan it was impossible for the Government to say how many deaths had been caused by the treatment.—*The Homoeopathic Recorder*, May 15, 1914.

CLINICAL RECORD.

MALARIAL CASES AND TREATMENT.

BY DR. L. CARL SMITH.

Case I. Patient, X., male, in city and county hospital of San Francisco, 1906. Malaria acquired while working in the Sacramento valley. Type, quotidian; paroxysms, regular; chill, fever and sweat occurring every afternoon, preceded by and accompanied with very severe cramping, griping pain in the abdomen. Patient could get relief only by sitting up in bed, leaning forward and pressing his fists hard into pit of stomach. The hard pressure on abdomen constituted the amelioration. The pain gradually wore away during the sweat. During apyrexia there was much gastric disturbance, as shown by bloating, more or less constant pain and distress in abdomen, with anorexia.

Treatment: After several days of utter failure under routine treatment, the symptoms present were considered. Colocynth 3x was ordered administered every two hours during the apyrexia. Effect was instantaneous. Relief of all symptoms from first dose. Appetite returned. No relapse.

Case II. Patient, N. B., foreman on ranch near Chico, 1909. Malaria for about ten days. Treated unsuccessfully by a Chinese "doctor," and later by an allopathic physician. When seen by us the following clinical picture presented itself: Malarial paroxysms every afternoon, consisting of chill, fever and sweat. Constant aching in head, back and limbs. Sensorium, clouded. On verge of muttering delirium. Apathetic. Answers connectedly when spoken to, but immediately relapses into a semi coma. Face dark, besotted looking and expressionless. Tongue, dry: white on edges, and a dark-brown streak down middle. Sordes on lips and teeth. The typical status typhoidus.

Treatment: Baptisia 3x, effected a complete cure. No relapse.

Case III. Patient, F. R., Chico. 1909; occupation, blacksmith. Has been suffering from malaria several days. Has had

the disease several times in the past. Has been under the usual old-school treatment for several days, getting steadily worse. We were sent for, as patient had heard we cured malaria without Quinine. He stated that Quinine would not cure his sickness; it only made him worse. Patient complains of chill, fever and sweat every day, beginning about 10 or 11 A.M. Chill preceded and accompanied by intense, beating headache and great thirst. Headache continues through heat and sweat. Face flushed and waxy-looking (in fever); an anæmic flush; lips lined with water blisters.

Treatment: *Natrum muriaticum* 6x brought about an absolute cure. Amelioration from first dose. No relapse.

Case IV. W. McG., 1909; laborer on ranch near Vina. Brought to Sisters' Hospital, Chico. Diagnosis, malaria; tertians, regular paroxysms, chill, fever, sweat. Chill every other day about 9 A.M., preceded and accompanied by great thirst and intense, deep seated aching. "My bones ache," to use the patient's voluntary description. Aching continues through the chill. Severe headache. Vomiting at end of chill, between the chill and heat. Lips swollen and covered with sordes.

Treatment: *Eupatorium perfoliatum* 1x. gtts xii, in one-third glass of water, a teaspoonful of solution every two hours during apyrexia. Result, immediate relief of all symptoms, and no relapse.

Case V. P. T., Madeline, 1911; ranchman. Has lived near Modesto, where he had masked malaria every summer during June and July for several years. On June 10, 1911, was seized with nausea and greenish vomiting. Occipital headache, changing to frontal region. Vertigo, moving or rising. Aching and deep muscular soreness. Worse every other day. Incomplete remissions.

Treatment: *Eupatorium perfoliatum* 2x every four hours, followed a month later by *Silicea* 6x, effected a complete cure. No return of symptoms. Patient under observation for eleven months.

Case VI. R. J. S., Madeline 1911; stockman. Had malaria twelve years ago in Michigan. Has lived in San Joaquin valley for four years previous to coming here. Present attack consists of nausea and greenish vomiting every forenoon. Great thirst, but drinking aggravates the vomiting. Vertigo on rising or moving head quickly. No chill, the foregoing symptoms taking the place of the chill. Fever every afternoon, followed by sweat. Aching in small or back and lower limbs. This is a case of chronic, masked malaria, complicated with cinchonism. Arsenicum album was exhibited in the thirtieth potency, four powders, one to be taken every other morning. Results were all that could be desired. Patient was under observation for three months. There was prompt cessation of the symptoms, no relapse, and general health improved.

Case VII. C. A. G., Madeline, August, 1911; laborer. Had malaria thirty years ago in Missouri. Acute outbursts at frequent intervals ever since. During past seven years has resided in Modesto, where he has suffered from so-called liver trouble, which, he says, his physicians state is of malarial nature. General poor health for past five years. Three years ago had a sudden attack of blindness, which lasted three months. This consisted of partial blindness and double vision. Slowly recovered normal sight. Four months ago he became decidedly worse, with severe frontal headache, general weakness and malaise. Upon medical advice he went camping in the mountains, and was so engaged when he called on us.

Present symptoms: Anæmic and ill-nourished appearance. Loss of appetite, nausea and vomiting. Two hours after meals, general weakness, constant, dull frontal headache. Aggravations: Two hours after meals thinking of his symptoms, mind, hypochondriacal; bowels, badly constipated.

Previous medication: Has taken Quinine in large doses and in frequent and prolonged periods. For some time past has been taking purgative pills every other night to overcome the constipation. Bowels refuse to act without a laxative, so he says.

This is evidently a case of chronic malarial cachexia, combined with cinchonism. The present symptoms and past history call for Ipecac, which was exhibited in the thirtieth potency, four powders, one every other day. All other medicine ordered was discontinued.

Three weeks later patient reported decided improvement. He voluntarily stated that the treatment received was more efficacious than any he had yet received. As the bowels were still slightly constipated, *Natrum muriaticum* 30x was prescribed, four powders, one every other day.

As to posology, our experience has taken us from Quinine in massive doses to the thirtieth potency of the indicated remedy. Many cases we have encountered that defied all attempts at medication except material doses of Quinine. But these latter we could not consciously denominate cures; rather, they were suppressions. The subsequent history of such cases shows that the patients were not radically cured, but were yet suffering from something left in the organism after the malarial paroxysms ceased. And they had relapses and recurrences. Such results are not satisfactory from any just point of view.

. If it is asked why were not all our cases treated and cured as were those described above, the answer is that the indications are not always so plain to the prescriber as they were in the cases detailed. These cases were clear cut and decided. In many instances the symptoms are obscure and indications seem mixed. But this does not preclude the probability of securing better results in these mixed cases if the remedy could have been more accurately chosen. It is easily conceivable that if the prescriber's knowledge of the pathogenesis of remedies were only coextensive with the anamnesis of his patients, our failures would be far less frequent than they are at present. It is our firm conviction that the physician's ability to recognize indications for remedies in his patients bears a direct relation to his familiarity with *materia medica*. If we are not thoroughly familiar with remedies as they are, described in our books, we cannot hope to recognize

these remedies when we meet them in our patients. We plead for a deeper and wider knowledge of materia medica. A better acquaintance with our tools will result in more satisfactory work, and in a refutation of the charge so often made that homœopaths have to resort to allopathic measures whenever they have a real serious case on their hands.

Further, a study of the above cases shows that one must abandon the idea that only a certain set of remedies is of service in the treatment of malaria. Witness "Case I," a specially stubborn and malignant type, cured by *Colocynth*, a remedy scarcely or never mentioned in any work on practice as an anti-malarial. There are no anti-malarials. The very word is a therapeutic absurdity. Prescribe for your patient with his totality of symptoms, and not for malaria, nor for any other name. Then you will succeed.

Conclusions—1. Although it has an acute stage, malaria is essentially a chronic disease, underlying and complicating many acute disorders.

2. Quinine *may* suppress but can not cure malaria, unless it be indicated by the law of similars. It is by no means a specific.

3. The similar remedy as indicated by the totality of symptoms under the law of cure is the true and only specific for malaria.

4. Any potency will cure malaria if only the remedy be scientifically chosen. Individuals of different temperaments and constitutions may react better to one potency than to another potency of the same remedy. The potency question is foreign to this discussion.

5. A closer study of materia medica is needed. Such study will result in indications for remedies being more readily recognized, and consequently more cures will ensue.

6. Routine treatment will meet many failures. Any remedy in the materia medica may be called for. Individualization is the prime essential to success.—*The Medical Advance*, April, 1914.

CASES FROM PRACTICE.

BY DR. A. MCCANDLISH.

In August last a visitor to our town consulted me. He gave me his history as follows : He has been suffering from some time from Diabetes. Of late he has had a very troublesome cough, which his own medical man has not been able to do much for. His sight has become so bad that he cannot find his way to his office, he has to be led. He consulted an ophthalmic surgeon, who told him that his optic nerves showed signs of atrophy and that he had commencing cataract in the right eye. The commencing cataract could be clearly seen.

I prescribed *Phos.* 6gtt. iii. *t. d. s.*

September 15th.—His wife reports : “The blur on my husband’s right eye is smaller. His cough is much better.” Rep.

October 7th.—“My husband can easily find his way to the office.” *Phos.* 30 disc ii. night and morning for one week.

November : “My husband’s sight slowly improving. He can now distinguish the stones of the pavement.” Rep.

This patient is still under treatment.

A dispensary patient came to my house in a great state of excitement about 2. 30 p. m., telling me that her throat was very bad, and that she was dreading four o’clock, as she had nearly choked about that time the last two days. (This information she gave quite voluntarily.) She also added that her “husband dreaded tea time coming, too.” She had an enlarged right tonsil with pus exuding from the follicles.

I prescribed *Lycopodium* 6, disc ii. one hourly for four doses. I also told her to send her husband to me at once if she was taken worse at that time again.

I did not hear any more of her until five days later, when she came to the dispensary ; her throat was practically well. She said she commenced to get well after the first dose of medicine.

This case is interesting on account of the *marked* time modality.

I was called to see A. B., a young married woman. She had been suffering from diarrhoea and vomiting for six weeks. Getting worse, in spite of six weeks allopathic treatment—including a consultation between her own doctor and another practitioner in the neighbourhood. Could only crawl around the room with the aid of the chairs and table. The story in her own words is as follows: "Everything I take causes diarrhoea, and I also vomit after everything I take. I am very thirsty, and could drink quarts of cold water, but even that will not keep down. It keeps down a little while, and then it returns. The strange thing about it is that I have no pain, but I am getting weaker every day."

I immediately ordered suitable diet and *phos. 6, t. d. s.*

The diarrhoea and vomiting stopped almost immediately, and in five days time she went away for a holiday, and has not had a return of the trouble since (four months).

An elderly gentleman aged 74 consulted me, complaining of exceptional frequency of micturition (every ten minutes). He was getting quite worn out. He could not visit his friends. When he first saw me the frequency was so bad that he could not walk one hundred yards without wanting to micturate. He presented all the classical symptoms of enlarged prostate; in fact an enlarged prostate was found on rectal examination. I prescribed *secale 3x*, one disc., *t. d. s.* for one week.

He reported at the end of the week: "I am very much better; I can go two hours without passing water."

He was told to discontinue the discs unless the frequency returned. He has had to take the *secale* once only since first consulting me in March last.—*The Homœopathic World*, January 1, 1914.

INDICATIONS FOR, AND MY EXPERIENCE WITH, PHOSPHORUS, IN PNEUMONIA.

BY E. B. FRANKLIN, M.D., NEW YORK, N. Y.

As for my experience with phosphorus in pneumonia, I will mention only two cases.—When gripe first invaded New York, a young lady who had suffered an attack was so recovered that she went out to dinner with a friend, returning late in the evening. She had no knowledge of having had any chill or of having “taken cold,” but was seized with a violent fever in the night, and I was called, and found her with a temperature of 106° and pneumonia established. She was desperately ill, and sank down and down. Phosphorus was indicated clearly through a long portion of her illness. I gave it first in the 6th centesimal dilution, and it aggravated her case, so she said she felt she was smothering after every dose. So I changed to a high attenuation—I think it was the 30th,—which left nothing to be desired.

Another case was that of a young travelling salesman who was seized by pneumonia while in the South, and lay in bed for three days, when the doctor told him if he wished to get home alive, he had best get on a sleeper and go at once. I met him in New York and put him at once in bed. His lungs were badly involved, and he sank down, so that he gave us the “death rattle,” as the old folks used to express it, all one day. I also aggravated his case, by giving phosphorus 6th centesimal, so changed to the 200th, which was continued with success.

Let me say, I am not a high-potency man. I sometimes give mother tinctures. Have given even the mother tincture of belladonna, a few doses, and find that we must select the proper strength, as well as the proper drug, to suit the case and diseased condition in this very difficult business of prescribing.—*The New England Medical Gazette*, May, 1914.

Gleanings from Contemporary Literature.

SOME INTERESTING CLINICAL CASES.

By WILLIAM PERCY PURDOM, M. B., B. S. Lond.

MR. PRESIDENT AND GENTLEMEN,—I propose to bring before you this afternoon a few interesting, and, I think, instructive cases which have occurred in my practice during the last four years ; some of them are cases the like of which I hope I may never meet again, while others make one feel life is worth living, even in the medical profession, if one can relieve the sufferings of one's fellow creatures and save or prolong life.

I will first relate to you two obstetric cases which proved very alarming to me and a great danger to the patients concerned, though happily neither ended fatally.

INVERSION OF THE UTERUS AT PARTURITION.

The first occurred in January, two years ago. The patient was a primipara, aged 23. She was taken ill on a Saturday afternoon and sent for me in the evening. I saw her about 7 p. m., the pains were fairly strong and recurring every five or six minutes ; the labour progressed normally though slowly until 10 p.m., then the pains became weaker and did not seem to do any good, and the patient was tired and asking to be helped, so I applied forceps and delivered the child quite easily with the patient under chloroform. There was nothing abnormal about the baby, and I did not anticipate any further trouble with the mother, so allowed her to come round from the anæsthetic ; half an hour later I expressed the placenta in the usual way without any difficulty and without any traction on the cord, but shortly after this the mother became very collapsed without any obvious cause ; she was losing very little externally and yet her pulse became rapidly weaker and she became unconscious.

I sent her husband for the nearest doctor, and when he came he examined her abdomen and remarked to me that the uterus was well contracted : he suggested giving her a dose of pituitrin, which I at once did, and her pulse improved a little after and the other doctor left. The improvement, was, however, only very temporary, and she soon became worse than ever ; I could feel no pulse at the wrist and I felt she was dying, and yet I did not know why. I then did what I ought to have done much earlier, that is, I examined her internally. This I never do in ordinary cases, and as I had

not suspected the cause of the trouble I did not at first in this case, but when in desperation I did so. I at once recognized the cause of all the trouble.

I had never seen a case of inversion before, but it was unmistakable; the lower half of the uterus was enormously distended and filled with blood and bulging into it was the partially inverted fundus; the hand on the abdomen could then distinctly feel a cup-shaped depression in the fundus, and yet, grasping the fundus as a whole it felt as though it were firmly contracted. The inverted portion was replaced by steady pressure from within. A hot intra-uterine douche was then given and a hypodermic injection of ernutin, and I then started continuous saline infusion into both axillæ. The patient was all this time quite unconscious, and no pulse could be felt at the wrist. The infusion was kept up continuously for thirtysix hours, some saline was also given slowly into the rectum, and injections of ernutin were repeated every two hours. The uterus responded very well, and there was very little hæmorrhage. At the end of twenty-four hours the pulse could again be detected at the wrist, and the patient slowly regained consciousness, though it was two days before she was able to speak. During these two days she had saline injections per rectum three times a day, and she eventually made a perfect recovery and is now as well as she has ever been.

Such a case is happily of very rare occurrence (only one in a hundred and ninety thousand cases at the Rotunda Hospital) and probably most of us will never see one, but we must be prepared for the unexpected, and I think there are two points of importance in this case, where I made a mistake. The first is that I put on forceps when the pains were slackening off, that is when there was evidence of secondary uterine inertia, and this I think must have been the cause of the inversion. As I said before, no traction was applied to the cord, and it was not round the child's neck whereby it might have been unduly shortened and so pulled on the placenta when the child was born; and the placenta was expressed with the greatest of ease, and yet the inversion occurred and nearly proved fatal. The second point I would emphasize is that in any case where a patient shows signs of collapse after the baby is born, a vaginal examination should be made without delay; if I had done this, in all probability my patient would never have got to the state she did; but one learns more by one's mistakes than by successes or from books.

CONTRACTED PELVIS CRANIOTOMY.

The second case occurred in October last; the patient was a primipara, aged 23, a sturdily built woman who looked the picture of health and had never had a day's illness before. She had reckoned that the baby was due on September 28, and she actually had a slight "show" on that day, but as nothing further happened she did not send for me, and it was not until October 26, just four weeks later, that labour really started. I saw her on a Sunday morning, and the pains had been fairly bad all night, but the membranes had not ruptured as far as she knew. On examining her, I found the os uteri dilated to the size of a two-shilling piece, no bag of membranes could be felt, the head was high up and not properly engaged in the pelvis, and the relative position of the fontanelles to the pelvis could not be made out, but from abdominal palpation the baby's back was forward and to the right. I gave the patient a dose of chloral and ordered a hot enema to clear the lower bowel and then left her. Four hours later I examined her again; during this interval the pains had continued fairly strong every four to five minutes, but practically no progress had been made, the os was a little more dilated, but the head had not descended at all; the patient's condition remained very good so I decided to wait a little longer before applying forceps. At 8 o'clock that evening I found the patient very weary of it all, the pains were very strong but they made absolutely no impression on the baby; so I put her under chloroform and applied forceps; it was a little difficult to get them on as the head was so high up and the os was not fully dilated, but I managed it all right and then proceeded to pull. The pains were fairly strong at the beginning. At the end of a couple of hours I was pretty well worn out, and had made absolutely no progress with the baby; the forceps had slipped off several times but the head had not moved. I then sent for another doctor and he brought some axis-traction forceps with him and he tried with these for an hour, with no better success; we could feel the promontory of the sacrum projecting forward very much and there did not seem the least prospect of ever getting the baby out alive, so we decided that the only thing to do was to perforate and crush the head, but this could not be done in the patient's home, where there was hardly room to walk round the bed, so I went back to Sutton and managed to get a motor-car, although it was then 3 o'clock in the morning, and in this I took the patient up to Guy's Hospital. The obstetric surgeon came to

see her about 4-30 a. m., and he soon decided that it was no good trying forceps any more, so he perforated and crushed the head ; but even this was not enough, the base of the skull had to be crushed separately, the arms had to be cut off with scissors and removed, and the thorax and abdomen had to be eviscerated before the baby could be dragged through the pelvis, the operation taking over two hours of hard labour. The surgeon remarked to me afterwards that he had had some pretty stiff cases but this "took the bun," to use his own words. After the placenta had been removed, he examined the pelvis and found that the transverse diameter of the brim would only just admit his two fingers side by side. No wonder, then, that all our efforts to pull a baby through had been in vain. It was quite certain that the mother could never have a full-time living child born through the natural channel, and we told the patient and her husband so, but at the same time we promised that if she ever became pregnant again we would get her into hospital and do a Cæsarian section which was the only means of her having a living child.

The patient made a very good recovery considering what she had been through. There was a little fever for a few days, and for one day she was delirious and had strange delusions, but this all cleared up and she is now perfectly well and strong. The chief interest of this case is, I think, to show how deceptive are external appearances. I do not think any of us would have suspected any contraction of the pelvis, and yet, we see how great the deformity proved.

GASTRIC DILATATION.

I now come to two cases of what was diagnosed as cancer ; in the one case of the pylorus, in the other the primary focus was thought to be in the bowel with secondary deposits in the liver. By a curious coincidence these two patients were father and son.

I will give you the father's case first as it occurred first. He is a man of 72 and lives in the country, about four miles from Sutton. A month before I was called in he had been seen by two doctors, one a specialist, and they had diagnosed cancer of the pylorus, and given him six months to live. They had told him that the only hope of prolonging his life was for him to have an operation. This he refused, and as he had always believed in homœopathy and had heard there was a homœopathic doctor in Sutton, he sent for me in November, 1911. His wife told me that he had

persistent vomiting for six months, during which he had wasted away to a skeleton. The character of the vomiting was that he would go two or three days without, and then would bring up enormous quantities of very bitter dark green or brown fluid ; often filling a pail right off : then he would have a day or two's rest. He had very little pain but great discomfort in the abdomen with excessive flatulence ; he felt "blown out" after eating two or three mouthfuls ; his bowels were constipated and the urine was usually loaded with red deposit of urates.

When I saw the patient I thought at once it was a hopeless case ; he was dreadfully emaciated, hollow cheeks, and sunken eyes ; he had lost 3 stone in weight in six months and he looked as though he would not live three months. On examining his abdomen the stomach was found enormously dilated, the resonance extended an inch below the umbilicus, and fluid could be heard splashing about all over the abdomen. I could not feel any tumour in the region of the pylorus nor elsewhere in the abdomen ; the heart and lungs were normal.

Although the vomit contained some brownish material, there was no blood in it, and the patient had never passed any blood *per rectum*. The diagnosis, however, seemed obvious, and I told the patient and his wife that I could only agree with the doctors who had seen him before, as I felt sure he had a malignant growth in his pylorus leading to dilatation of the stomach behind it. I also told him that if I did not know that he had already refused an operation, I should have advised this as the only hope of prolonging his life. He was quite decided about this and begged me to try what homœopathy would do, so I agreed to try. I went over his case carefully and almost all his symptoms pointed to lycopodium. The patient himself knew a good deal about homœopathic materia medica, and he agreed that this seemed the best indicated remedy, so I gave him two doses of lycopodium 30. In addition I stopped practically all fluids by the mouth, and put him on a fairly liberal solid diet consisting of fish, chicken, meat jellies, milk puddings, &c., and also ordered one quart of uga sour milk to be taken every day.

From that time the patient steadily improved ; he was only sick twice more, and took the food well in small quantities at a time, and he started putting on flesh and gaining strength. In a fortnight he was out of bed, in a month he went out in the garden, and in three months he was doing his work again ; he continued the uga milk in addition to an ordinary diet, and on Christmas Day, less than

two months from the time I first saw him, he ate turkey, plum pudding and mince pies (though not with my sanction), and thoroughly enjoyed them and was none the worse after.

The lycopodium was repeated at intervals of about six weeks for six months, and then we stopped it as he seemed quite well and remained so for twelve months. Then he had a slight relapse, the vomiting returned for a week, and he again lost weight for a short while, but with a restricted diet for three weeks and some lycopodium 200 he soon picked up again. This was in April last year and since then he has had no recurrence of the trouble, and I heard from him at Christmas time, saying he was perfectly well and had gone to Paris to see his son. He has more than regained the 3 stone in weight which he had lost.

I think this is a very interesting case for several reasons. In the first place, what was the diagnosis? What the pathological condition? I am not going to publish the case as one of cancer of the pylorus cured by lycopodium. I am quite convinced that we were wrong in our diagnosis, for even supposing that cancer could be cured by medicines, it could not have cleared up as quickly as this one did. There was certainly great dilatation of the stomach; was this due to pyloric obstruction, and if so of what nature? Personally, I am inclined to think it was more likely due to a paralytic condition of the walls of the stomach, allowing it to become dilated; but against this is the fact that at intervals the stomach was capable of emptying itself of its contents.

Whatever be the explanation the fact remains that the patient is now, two and a quarter years since I first saw him, alive and perfectly well, eating ordinary diet, and there is no evidence of any dilatation of his stomach.

Again the question arises, what was it led to this apparently miraculous recovery? Was it the lycopodium 30, or was it the change of diet, or was the whole thing a mere coincidence, and the patient would have got well without either? I do not know, and from the patient's point of view it really does not matter; he himself is quite convinced that it was homœopathy which saved his life, and when in November, 1912, his eldest son was suffering from some stomach trouble, the father asked me to go up to Finchley to see him as he felt sure I could cure him, but in this he was, alas, mistaken, as the sequel will show.

GASTRIC CANCER (?).

I went to see the son on December 8, 1912, and had a long talk with his wife first, and she gave me the following history : The patient, a man aged 43, had always been a healthy man until the nine months, during which he had been getting steadily thinner and weaker. He complained of no pain and had no sickness, and had not consulted a doctor until a month before I saw him. The doctor did not think seriously of it at first, but when he examined his abdomen and found a hard tumour there, he realized how serious the condition was. A specialist saw him and said he had an inoperable cancer, and gave him six months to live. The doctor did not tell the patient this, and he remained quite hopeful and did not think there was much wrong with him. When I saw him he remarked to me that if only he could get a little stronger he would soon be all right, and he had even booked his passage for South Africa for the following week, in the hope that the voyage would set him up again.

I went over all the symptoms and then examined the patient thoroughly. His heart and lungs were normal. In the abdomen a large hard mass, the size of an orange, could be felt in the right hypochondrium. It moved with respiration and appeared to be in the left lobe of the liver ; there was no tenderness on palpation, no evidence of a dilated stomach, and nothing else could be detected in the rest of the abdomen, nor *per rectum*, so that if the growth was a secondary deposit we could not ascertain where the primary focus was.

The patient was very emaciated, but was nevertheless quite confident that he would soon be better. I had a talk with his wife and father and told them that I could do nothing, and that I did not think he would live more than six or eight months at the outside. The father reminded me that I had told him the same thing two years ago, and begged me to try some homœopathic medicine. I agreed to try, though I felt sure it could do no good.

I had gone over the whole case carefully, and there were several well-marked mental and general symptoms which pointed strongly to one remedy ; *e.g.*, he could not look down from a height without feeling he must fall over ; he could not go to church, or to a theatre, the very thought of it upset him ; he could not go to a crowded place, and a hot, stuffy room made him feel dreadful ; if he made an appointment he was in perfect ferment all the time lest he should be unable to keep it ; he was over anxious ; he craved open air, also cold drinks, also sweet things, but these always upset him, gave him

indigestion. On these symptoms alone I think you would all agree that *argentum nitricum* was his remedy, and I accordingly sent him three powders of this drug in the 30th potency, the powders to be taken at four hours' intervals.

He took the first at 8 p.m. on December 10, and the second at midnight, then he went to sleep, but at 3 o'clock he awakened with very severe pain in the pit of his stomach, and a few minutes later he vomited about two quarts of blood and died almost at once. It can be imagined that I received a shock when hearing the news. What did it mean? Was this an aggravation from the remedy; I had felt very sure as to the similimum and had purposely only given it in the 30th potency, as I did not expect any aggravation from this, and yet the patient died suddenly after the second dose, having previously had practically no vomiting and no hæmatemesis. Of course, this may have been a mere coincidence as in the last case, but the sequence of events is most remarkable. The man had done nothing unusual the day before; he had been in bed all day and had nothing but milk to drink, and he was asleep when the pain awakened him.

We all know that *argentum nitricum* causes ulceration of the stomach with hæmatemesis, so I suppose it is quite possible that in this case it stirred up a violent reaction which the system was unable to bear and caused a blood-vessel to give way, the hæmorrhage from which proved fatal. Whatever the explanation is, the occurrence gave me a fright and made me wish I had not been so accurate in selecting the remedy, or else that I had given it in a still lower potency.

I come now to my last two cases, both of which unfortunately ended fatally.

Ulceration of the stomach in children is very rare. I had never seen a case before, and several books I have referred to do not even mention it. I think the only likely cause is the swallowing of some foreign body with sharp points on it, such as spicules of bone, &c.

GASTRIC ULCER IN A BOY, AGED 4.

The first case was a boy, aged 4. He had been the healthiest child of a family of three, and had never needed a doctor, his only troubles being occasional bilious attacks.

On August 5, 1912, the mother sent for me and told me that two nights previously (that is, in the early morning of August 3) the boy had wakened up suddenly screaming with pain in his abdomen;

he was sick soon after and the sickness continued at intervals all that day, the vomit being of a chocolate-brown colour. The mother, unfortunately, thought it was one of his bilious attacks, and so did not send for me until two days later, that is, about fifty-six hours after the onset of the pain, and when I saw him I knew at once that it was something far worse than a bilious attack. The boy was lying on his back with his knees drawn up, his eyes were sunken and half open, there was an anxious expression on his face, and before I examined him at all I was certain that he had peritonitis. His pulse was very feeble, 130 to the minute, his temperature was 101° F., the tongue was parched and dry.

The abdomen did not move much on respiration, and to the right of the umbilicus a very distinct lump could be felt, very tender to the touch. At first I thought of appendicitis, but I soon changed my opinion, and decided that the lump felt was an intussusception. My father saw the boy a little later and agreed with the diagnosis, and that immediate operation was the only hope, so I brought the boy up in a car to the hospital, and Mr. Hey operated as soon as arrangements could be made. The intussusception reduced fairly easily, the bowel was very dark in colour but was not gangrenous, there was recent general peritonitis. A drainage tube was left in, and continuous saline infusion was started at once. The boy lived for two days, and during this time the vomiting and hæmatemesis continued unabated. It was not clear what the hæmatemesis was due to, so I got permission to make a *post-mortem* examination and we found extensive ulceration of the greater curvature of the stomach and near the pylorus, and there was an inflammatory condition of the whole mucous membrane of the stomach. The bowel, which had been intussuscepted, was now sloughing and there was pus all over the peritoneal cavity, so that the boy could hardly have got well.

The cause of the ulceration of the stomach and of the intussusception was some hazel nuts which the boy had swallowed the day before the onset of the pain. He had complained at the time that he had swallowed some pieces of glass which hurt him, but this was probably some of the sharp pieces of the husk which he thought was glass. This then was a case of ulceration of the stomach associated with an intussusception, both conditions being set up by the irritant action of the foreign body. This was a very sad case, because of the delay in sending for a doctor. The poor mother had just had her baby very ill and did not want to start another doctor's bill, and

she did not of course recognize the seriousness of the case. I think if I had seen the case from the first onset we might possibly have been able to save the boy, but after nearly three days the case was almost hopeless from the start.

GASTRIC ULCER IN A LITTLE BOY

My second case of ulceration of the stomach occurred only last month.

I was sent for into the country on January 11, to see a little boy, aged 2½. The history was that he had been poorly since early Friday morning (January 9), with persistent sickness; he could keep nothing down. He was not apparently in pain, and at times was quite bright and cheerful. I might mention here that he had had a very similar attack just fourteen months before, which lasted ten days altogether; he had persistent vomiting and hæmatemesis on this occasion also, with some rise of temperature and pain in the epigastrium; his bowels were constipated, but he passed no blood *per rectum*. He apparently made a complete recovery with the aid of phosphorus and arsenicum and starvation for a couple of days, though we did not have to feed him by the bowel. This first attack apparently came on after the child had eaten some jugged hare, a truly extraordinary diet for a child of 14 months old as he then was, and I concluded that he had swallowed a small spicule of bone which had set up some ulceration in the stomach. Between the first and second attacks the boy was perfectly well, though always rather fastidious about his food, and inclined to retch if food was pressed on him too much. Before the second attack he had had some soup made from stock and bones, I think, and this was the only thing we could find which might have upset him. When I saw him he looked ill, he was hollow under his eyes and had an anxious expression, the tongue was dry, pulse quite good, 100 to the minute, temperature 99° F.; he was very thirsty, wanting to drink cold water all the time, but everything he took came back in a few minutes, the vomit being dark brown with altered blood in it. The bowels were constipated but had been relieved that morning; there was no blood in the stool. I put him on arsenicum 30 every two hours, and ordered cold milk and water, equal parts to be given in very small quantities every hour. The next morning he seemed decidedly better; he had not been sick for four or five hours, and had been sleeping quietly. In the afternoon, however, the sickness returned as badly as ever, and the parents were very anxious and asked Dr. Roberson Day to come down and see the child; Dr. Day arrived late on the evening of the

12th. He could feel nothing wrong in the abdomen of the patient: the rectum was full fæces, some of which was scooped out with the finger; there was no trace of blood in the fæces. Dr. Day thought the case one of acute gastritis and gave 100 c.c. of isotonic sea water, and ordered arsenicum 12 every two hours. Next morning the child seemed a little better, the pulse remained good, and the temperature was only just above normal and he had had some sleep. We gave him small feeds of peptonized milk, and he retained this for two or three hours, but then the sickness returned and bad as ever, so we stopped everything by the mouth except ice to suck, and phosphorus 30 instead of the arsenicum.

We tried rectal feeding but he retained nothing,, and as the child was getting steadily worse we got Dr. Day down to see him again. After a careful examination Dr. Day thought he could feel a small lump on the right side of the abdomen under the liver; I could not satisfy myself as to this, but we agreed that something must be done, so we arranged to take the child into a nursing home in Croydon, and asked Mr. Shaw to come down to operate.

When the abdomen was opened, the most obvious thing was a very much distended stomach; there was no peritonitis, the appendix was normal, a well-marked Meckel's diverticulum was present but did not appear to be doing any harm; while the bowels were being examined, we suddenly noticed a distinct intussusception reducing itself before our eyes, the bowel looked perfectly healthy and there were no adhesions, but it was hoped that this was the cause of the trouble, and so the abdomen was closed without doing anything more. Thinking it over after, I felt sure that the intussusception we saw could not possibly have caused the trouble; if it had been there three days the bowel would probably have been gangrenous, and it certainly would not have reduced itself spontaneously; and there would have been some peritonitis round it, so it was obvious that we had not got to the solution of the problem and this turned out to be correct. The vomiting continued as bad as ever for the next thirty-six hours, during which the child kept nothing by the mouth. He was given salines *per rectum*, and managed to retain 4 to 5 oz. at a time, but later he returned this as well. There had been no action of the bowels for four days, but the rectum had been washed out. On the second day after the operation the child seemed a trifle better, the sickness stopped for twelve hours, but at the same time the pulse continued to rise, and by the evening was barely countable at the wrist, being somewhere about 180 to the minute. He had

quite a nice sleep that afternoon, and again in the evening he dozed off, and his mother, who was worn out, lay down on the bed beside him and herself went sound asleep. At 3 o'clock next morning, fifty two hours after the operation, the nurse went into the room, having left the mother alone at her own request, and found her still asleep and the baby lying dead in her arms. Such was the tragic ending to a tragic case, and the fact that it was an only child made it still worse.

I obtained leave to do a limited *post-mortem* examination through the operation wound. I found the stomach enormously distended and filled with the same dark brown fluid such as he had been bringing up before death; I should think the stomach contained a pint and a half at least. The mucous membrane was acutely inflamed and there was extensive ulceration round the pyloric end. The pylorus itself was, I should think, decidedly stenosed; it would only admit the blunt end of a large needle, about the size of a quill pen. The rest of the abdominal contents were absolutely normal, and I could find no trace of where the intussusception had been.

Looking back now on the case, it seems most probable that the first attack of hæmatemesis must have been due to some ulceration round the pylorus, probably caused by some foreign body, and that this caused contraction leading to dilatation of the stomach, and then something started off fresh ulceration and inflammation of the mucous membrane, leading to the second attack of vomiting and hæmatemesis which proved fatal.

Whether anything could have saved the child I cannot say. If we had not been put off by seeing the intussusception, I think we should probably have opened the stomach and then we should have found the real cause of the trouble; but even so, gastro-enterostomy would have been the only thing likely to help, and I very much doubt if the patient would have stood this.

I had thought of relating one or two more interesting cases, but owing to unforeseen circumstances I have not been able to get them written up; but the ones I have given you are, I think, both interesting and instructive, and I am sure we learn more from the few unusual and rare cases than we do from any number of normal ones.—*The British Homœopathic Journal*, May, 1914.

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TREATMENT OF GASTRIC ULCER.

BY ROY UPHAM, M.D.,

The valuable contributions which have emanated from the surgical clinics of the world during the past ten years have carried the subject of gastric ulcer from a purely medical disease, which position it occupied prior to the last decade, into the realm where the surgeon would claim decided position. The observations of the writer confirm those of the majority that the disease is not entirely surgical at the present time, and from his experience has evolved the following ideas in regards to the treatment of gastric ulcer :

With an established diagnosis of ulcer the first object is to determine if there is any degree of food stasis shown by test meal and radiograph. With an obstruction at the outlet of the stomach due to organic obstruction or spasm, the case is absolutely surgical and medical measures are of no avail.

Medical measures should be resorted to in every case which has not had a thorough and complete ulcer cure. Every case should be given at least one chance to get well by medical means and all incomplete and carelessly performed rest cures should be disregarded. Ambulatory treatment should be discarded and the rest cure insisted upon in every case. The observations with the

screen and radiographic plates have presented the argument that there is a loss of tonus in most ulcer cases. This means a stretching of the organ and enlargement of the area of involvement, namely, stretching of the muscle fibre of the walls of the stomach. Loss of tonus can only be overcome in the horizontal position when the weight is taken off the lower border of the stomach, and with the readjustment of the fibres the area of the stomach is reduced and there is less area of ulcer surface to be healed. Ulceration in the duodenum presents normal tonus, and Moynihan considers there to be no treatment but surgical of duodenal ulcers.

The writer believes in no medical treatment that does not confine the patient on his back for at least four weeks. The cases that are bleeding demand attention, and where the hemorrhage is excessive and the patient in a state of collapse, operation had best be deferred until the patient rallies. Moderate bleeding which is unhelped by rest and rectal feeding, shown by the presence of occult blood in the stool, demands operation. In cases of perforation, operation is the patient's only salvation, and the sooner the operation the better. Another argument, in favor of the requirement of absolute rest in bed while receiving the rest treatment, is the fact that in order to secure rest to the stomach a diet must be given for the first two weeks which is totally incapable in caloric value of fulfilling the necessities of nature; the patient cannot keep on his feet on the diet prescribed to insure rest to the stomach, and yet it will be sufficient to nourish him in bed. The question of the prophylaxis of ulcer will be covered in after treatment in great measure.

Rest Treatment.

Rest in bed over a period of four weeks and no less must be insisted upon. This means the patient's confinement to bed, and the foot of the bed elevated as with the Bucks Extension; thus helping to restore tonus, the patient not being allowed to get out of the bed for any reason; the wants of nature being cared for by a nurse. The stomach is given absolute rest by withholding all food or fluid by mouth. Much discussion has arisen as to the

value of nutritive enemas, but in the mind of the writer two facts have established their positive value.

First. Observations made with the rectal clyisma of bismuth and the screen have proven their passage forward to the ileocecal valve. Second: The work of intestinal stasis evolved in the last few years has demonstrated largely the damaging results of absorption from the ascending and transverse colon. If poison can be absorbed so can food.

If the patient is unable or will not take nutritive enemas, I should advise a period of abstinence. The first requisite in rectal alimentation is a skilful nurse. The cleansing enema of normal saline is given first every morning. One hour after the cleansing enema the first nutrient is given, and the other at eight hour intervals by the clock. The enema should never be over eight ounces and six is better. The enema can be given with a funnel and rectal tube, soft rubber twenty-eight to thirty French of the velvet-eye variety, and have the openings on the side and not on the end. The Murphy drip method is far the better technique with the enema not over ninety-eight degrees. The position of the patient to receive the enema should be on the left side with the knee together and the buttocks resting on a pillow. After the enema the patient must continue in a recumbent position on the left side for twenty minutes, then turn on the back for twenty minutes, then lie on the right side for twenty minutes. The rectal tube should be well lubricated, some well known lubricant such as K.Y. being used. The tube need only be passed into the rectum about four inches. This carries it about the fatal inch which causes the desire for bowel movement and gets the enema into the venous radicals which empty into the inferior mesenteric veins which empty their contents into the portal system and secondary digestion takes place in the liver. The venous radicals found about the lower part of the rectum are tributaries of the inferior vena cava, which is not a suitable region for absorption of food products, as secondary liver digestion does not take place.

The form of nutritive enema that we use is :

Wittes peptone	1 oz.
20 per cent. glucose solution	4 oz.
Completely peptonized milk	4 oz.
2 Yolks of	2 eggs
Teaspoonful salt	1

This has the caloric value of about 350 calories, and three per day give you about one thousand calories. We have always found this enema to be satisfactory and believe in the use of one enema of one composition ; due to the fact that the stomach and intestine can retain one variety of food for a longer interval than multitudinous mixtures.

The second enema consists of a composition of :—

Somatose	1 dram
Eggs	2
Sugar of milk	1 oz
Sevetol	1 oz.
Salt	1 teaspoonful

Preparation like liquid peptonoids, etc., are spoken of to condemn them, as the alcohol in them irritates the rectum. The German enemas of chopped meat and chopped pancreas I believe leave such large residues that they have become medical curiosities. Recently I have been using three enemas a day composed of fifty grains of dextrose, one tablespoonful of absolute alcohol, and one quart of water given by Murphy drip method. This gives a caloric value of about five hundred and appears to be of quite as much value as the more complicated enemas.

During the period of rectal alimentation the point that should be greatly emphasized is the toilet of the mouth. The mouth should frequently be rinsed with a permanganate solution of a light pink color which is at the patient's bedside iced. This is used as the patient is less apt to swallow it than some colorless antiseptic. The patient is encouraged to chew gum as it increases the saliva, which neutralizes the excessive gastric juice and rids the mouth also of its microbes. The septic conditions about the

mouth of the patient must be entirely cleared up; do not start a rest cure until the dentist is sure that the septic features have been removed from the mouth. The mouth should be cleansed at least four times a day. We believe that the individual can safely undergo five to seven days' rectal feeding before starting the feeding by mouth. Much better results have followed rectal feeding since we have instituted the Murphy drip method, and now we have no difficulty in keeping an ordinary patient on rectal feeding from nine to ten days, with little loss in weight and strength. Excessive thirst during the period of rectal feeding is assuaged by special enemas of saline. These are given by the Murphy method as required.

From the time the patient is put to bed hot applications are kept continually over the epigastrium, not small poultices, but large ones at least ten inches square. The writer's preference is for ground flax-seed poultices, backed up by the hot water bottle. During the night Pressnitz compresses can be applied. Spongionylene or electrically heated pads may be used, but the heat obtained from the flax-seed surpasses all others. The gauge as to sufficient heat can be arrived at by the increased pigmentation of the abdomen; in these cases if the heat is properly applied the abdomen becomes mottled but is not burned.

Considering the feeding of the case after the completion of the period of rectal feeding. The diet for the first day is as follows: The patient is fed from seven in the morning until ten at night. The hours between ten at night and seven in the morning being allowed for sleep. The food for the first day is: peptonized milk and albumin water. On the first day two teaspoonfuls are given each hour, and on the day following one-half ounce every hour to which one-quarter of a teaspoonful of sugar of milk is added in the cases of the milk feeding. Lime water can be added in the place of the milk sugar and will prevent the milk from curdling in large masses and the alkali will also neutralize the free acid in the stomach. On the second day two ounce quantities are reached and cocoa is added, Phillips' Digestive or Alkathrepta. On the next day the quantity is

increased to two and one-half ounces, and one feeding of orange juice is given in the morning. On the next day three ounces are given and as a variety malted milk is given in the middle of the day. On the fifth day four ounces are given and the intervals of feeding increased to every two hours, and at the end of the week we have arrived at the end of our starvation diet and make some efforts at feeding the patient more completely. All this time the patient has been steadily losing weight and becoming weaker, but from this time on which marks the beginning of the third week of treatment, we can increase the diet to meet the demands of the individual. Two rectal enemas are given the first four days of mouth feeding, and one the last three days of the second week. The diet for the first three days of the third week is :

- 7 : 00 A. M. 6 oz. peptonized milk.
- 9 : 00 A. M. 6 oz. cream of wheat gruel.
- 11 : 00 A. M. 6 oz. cocoa.
- 1 : 00 P. M. 6 oz. malted milk.
- 3 : 00 P. M. 6 oz. cocoa.
- 6 : 00 P. M. 6 oz. peptonized milk with tablespoonful
sugar of milk in it.
- 9 : 00 P. M. 6 oz. cocoa.

This merely supplies the wants of the individual who will complain of the quality of the food but not the quantity. About this time feeding of olive oil can be started: about four tablespoonfuls three times a day if possible. Where this is not well taken it will sometimes be accepted if given very cold, and sometimes can be taken through a glass tube with the extreme end in the back of the mouth. This will most always result in the patient being able to take it. A preparation of oil of parafine can be substituted for the olive oil, and where the bowels are costive this is much to be recommended, and is as healing to the ulcer as olive oil.

Beginning with the last part of the third week puree of potato, celery, spinach or asparagus can be added, and if the oil

treatment is not accepted, much can be done to ulbricate the ulcer by adding large quantities of melted butter to the food. Fresh butter should be used. An effort should be made at this time, if this method of oil treatment is given to have the patient take at least 1-4 of a pound of butter a day. Better not let the individual know he is consuming such quantities as this fact seems to be repulsive, and in ignorance this quantity can be readily taken. For the last part of the third week the diet will then be:—

7 : 00 A. M. 8 oz. peptonized milk with tablespoonful of sugar of milk.

9 : 00 A. M. 8 oz. cream of wheat with cream and butter.

11 : 00 A. M. 8 oz. cocoa.

1 : 00 P. M. 8 oz. puree of potato.

3 : 00 P. M. 8 oz. cocoa.

6 : 00 P. M. 8 oz. puree of asparagus with much butter.

9 : 00 P. M. 8 oz. cocoa.

Cocoa is given for its high food value, and also because it has an extremely soothing action on the stomach.

Beginning with the fourth week add soft boiled egg, milk toast, junket, custard and Bavarian Cream, and our diet will be as follows:—

7 : 00 A. M. soft boiled egg, farina gruel.

9 : 00 A. M. cup of cocoa.

12 : 00 A. M. puree of potato, Bavarian Cream.

3 : 00 P. M. cocoa.

6 : 00 P. M. soft boiled egg and junket.

9 : 00 P. M. cocoa.

This can be carried very well through the fourth week. In the fifth week we will return to the more rational diet and can add baked potato and mashed carrots. The complication of loss of tonus requires less quantity of fluid as soon as possible. No fluids should be given at meals. Solid meals and fluids at intervals should then be the order.

Diet After the Fifth Week.

The diet after the fifth week for ulcer cases, resolves itself for other reasons given in this paper, which is loss of tonus, into three meals of solid food with three meals of liquid food in between, milk and cocoa with lime water or citrate of soda being given at intervals. Three meals can be taken from the following: Soft boiled or poached eggs, cream cereals, puree of peas, beans, asparagus, celery, lettuce, boiled macaroni, boiled rice, baked potatoes, Bavarian Cream, gelatine, junket. During the treatment of ulcer, cases of Rickets occasionally occur. I had two patients within the last two years present themselves for treatment with swollen and inflamed ankles and wrists, due to a too strict diet. Raw fruit juices in small quantities should be given from time to time to correct these conditions.

Have a regular prescribed diet both as to time and amount; lest the patient abuse his stomach, do not be in a hurry to enlarge the diet. Relapse of a cured ulcer occurs often from a too generous diet with the patient on his feet. Now is the time to correct faulty habits, both as to rapid eating and the improper mastication of the food.

In following this diet for a very long time, care must be exercised and the following articles of food must be avoided: Coarse bread, fried potatoes, pies, pastries, cabbage, cheese, goose, duck, pork, ham, bacon, eels, salmon, beers and wines, raw fruits, spiced fruits, spiced foods, and all very hot or cold fluids or drinks. One of the chief factors in unsuccessful treatment of ulcers by medical means, is that careful diet is insisted upon for too short a period of time and the rest treatment is too shiftlessly undertaken. I know of no condition where attention to every detail is rewarded with such good success. In these cases every article of food taken for the first three months must be carefully selected and for nine months more strict adherence to the diet must be insisted upon.

Special Symptoms, Prophylactic Treatment.

The articles of diet already mentioned must be interdicted. The use of olive oil should be indulged in over long periods; no

laxatives, all of which simply irritate the gastric mucosa use of the tube at regular intervals to study secretion and motility, and the stool examined for blood at least every four weeks. Anaemias should be combatted after treatment. The preparation of choice is an iron which should be given hypodermically in order not to disturb the gastric juice. Cacodylate of iron should be given once in seven days and is the most successful treatment; and where the use of the stomach is necessitated one of the albumenoid preparations of iron, preferably ovoferum, is the drug of choice. Liquid paraffine or Carlsbad Salts are the only drugs allowed for the treatment of constipation outside of enemas. With difficult use of ordinary enemas, oxgall may be used, or night oil injections of paraffine or olive oil, to be held all night, will solve the difficulty. Then the ordinary soap suds enema in the morning will be effective.

The Lenhartz Treatment.

This regime which gives large quantities of food and so helps the patient to return more rapidly to normal feeding than by the Von Leube method, will not in my opinion stand the test of time, and I also do not agree with this plan of giving excessively cold preparations as advised in this method of treatment; as heat and cold are excessive stimulants of gastric juice and motility, I would only recommend the extreme cold in hæmorrhagic cases.

Einhorn's Duodenal Feedings.

The Lenhartz method of treatment of gastric ulcer I believe to have attained some of its popularity due to the fact that the patient is not depleted by starvation as in the Von Leube treatment and thus has greater power of repair, and this is the fact that draws to our attention the merits of feeding and treatment by the duodenal tube as advanced by Einhorn. In this treatment a small one-eighth inch or three-sixteenth inch rubber tube is passed and the end is weighted and so introduced as to pass the pylorus and to enter the duodenum. This can be proven by the aspiration of duodenal contents through the tube before feeding is begun. A smooth red rubber tube forty-two inches long is

used, and I believe the tube contrived by the surgeon is better than the regular duodenal tube, as the latter has a large metal bulb on the end, while the home made tube is weighted by shot inserted within the lumen and tied in place with stout braided silk. Two BB shot are enough. In inserting the tube twenty inches are passed, which carries the tube well within the cardia, and then twelve more inches are fed the patient, an inch at a time every five minutes, taking an hour, and this can be done by the patient himself lying on the right side. With no obstruction at the outlet the tube passes readily into the duodenum, where its presence can be proven by the radiograph or by the aspiration of its contents as previously noted. A patient after he becomes used to the tube has little difficulty in keeping the tube in place for the required twenty-one days. If all is working well it is my practice to leave the tube inside for the complete period, but often the tube can be taken out and the patient is so well nourished that it may be left out for a day to let the throat rest and then a fresh tube is inserted. After the shot are tied in place both below and above, the tube is perforated with a redhot applicator—through and through with about ten perforations covering about three distal inches. It is well to cover the tube with the following preparation where it is within the stomach: Protargol, 5 parts, Agar, 5 parts, Gelatine 18 parts, Glycerine 25 parts, and water to make a paste. This is heated and mixed and applied to the tube, and then the tube is put in 40 per cent. formaline for one half hour. This preparation is believed to aid the ulcer in healing, and to render the tube less irritating but is not necessary, as often I have used a tube not so coated, with good results.

During the time the tube is in use, absolute rest in bed flat on the back is required, after this with the tube out the patient may recline on a couch for the best part of another three weeks. In our ulcer cases we often do not get the ulcer entirely healed in the time in bed and many cures have failed because the diet was not insisted upon for a long enough time after the patient was up and about. Another cause of the failure is allowing the

patient to sit up in bed. I have before emphasized the fact that loss of the function of tonus was a most common complication of ulcer within the stomach, and the absolute flat-on-the-back position alone will overcome the loss of tonus. The restored tonus makes a much smaller surface to be healed.

Of course the tube is not used in cases with recent hemorrhages or with obstruction of the pylorus. The latter cases are pure surgical cases and the former are appropriate for the Von Leube treatment.

Einhorn Duodenal Treatment of Ulcers.

During the time the tube in place great attention must be given to the care of the patient's mouth and throat to prevent first, a filthy mouth as well as complicating parotitis and an inflammation of the pharynx and tonsils. The patient is encouraged to chew gum and the mouth is frequently rinsed with a weak permanganate solution. Fewick has his patients suck on a rubber nipple from time to time, as this flushes the salivary ducts and prevents an ascending infection. A 10 per cent. Argyrol solution should be used to paint the throat at least twice a day.

The length of the tube with the thirty-two inches inserted should be measured from the teeth and this measurement recorded so that the proper length can be kept in sight all the time, as the tube slips in and out a bit and without this measurement you are at sea as to just where the tube is, and you may be feeding into the stomach which is what you are trying to avoid. The tube can be held in place by means of adhesive plaster at the angle of the mouth, but I have found it much more comfortable to have a large string, or in women, a chain, about the patient's neck over which the end of the tube may be looped and held by slipping an elastic band over the two ends. Then the patient is not worrying lest all of it be swallowed.

Having determined that the tube is in its proper place, we can proceed with the feedings, which are completely peptonized milk. It is given in small quantities, two ounces first, and is given by the Murphy drip method; the can container being

about six feet above the patient's head. It is much more agreeable to the patient that the feedings be given quite hot; one hundred and twenty degrees in the can, and the rate of drop-page should be from sixty to one hundred per minute. The first feeding should be given two hours after the introduction of the tube. Following the introduction the patient is fed every two hour, eight feedings a day beginning at seven o'clock. The feeding should occur at seven, nine, eleven, one, four, six, eight, and ten o'clock. No feedings should be given during the night, which is devoted to rest and recuperation. The quantity is increased one ounce every feeding until twelve ounces are given. After this one tablespoonful of milk of sugar is added to each feeding and if that agrees, the white of one egg. Care must be exercised that the food is not too hot when the egg is added lest it becomes coagulated and a stoppage of the tube occur. The following day an ounce of cream can be added to each feeding. This brings the caloric value of each feeding up to four hundred and twenty calories and the total value for the day to three thousand three hundred and sixty. As a person of one hundred and fifty pounds on light work only requires two thousand six hundred calories it will be readily seen that our patient is being very much over-fed. Thus we are fulfilling the requirements of having our patient very well nourished and no tax being put upon the stomach. The inconvenience that the individual has with the tube has totally subsided after twenty-four hours, when the patient rarely complains of any discomfort from the apparatus in the mouth.

Following every feeding the tube should be washed out with sterilized water, lest it become filled with detritus and become foul. Occasionally the tube becomes clogged, in which case an ordinary syringe can be filled with sterilized water and the tube thus washed out. The large amount of fluid in the nourishment usually prevents any thirst, but if the patient desires water it can be readily taken through the tube. Any medicines that are desired which are not specially indicated to act upon the stomach can likewise be given through the tube. The feedings which of course go into the intestine which is not physiologi-

cally adapted for the reception of foods which have not been previously acted upon by the salivary glands and the stomach; but in a measure the peptonization of the milk has replaced some of the normal functions and very little distress is felt by the patient. They are distinctly conscious of the amount of food being introduced and as a rule break into a perspiration and feel a distinctly warm glow all over their bodies. All symptoms of ulcer as a rule subside at once. I think the greatest difficulty is to overcome the fears of the patient and after it has been explained to them that their salvation is the feeding by the tube, or operation, if the tube is not properly handled, they approach what I consider the lesser of two evils with a far calmer mental state and no difficulty is experienced. We will presume that these cases have the stomach tube passed; as the type of individuals for which this is applicable are those who have serious stomach conditions which warrant thorough treatment, and after the large diagnostic tube has been employed several times the small duodenal tube is readily swallowed, particularly if small swallows of water are taken with it, being sure to start with your patient on an empty stomach. Cures from this line of treatment are much better than any other form of treatment where it can be applied. Following this treatment for twenty-one days (the use of the tube) the tube is removed and the patient can immediately be placed upon a couch, and partially peptonized milk be given by mouth. This can be increased by rice, gruel, sago and other gruels, and then the ordinary diet of soft eggs, purees, Bavarian cream, etc., can be quickly instituted. Your patient rises from his sick bed in much better condition than ever from the ulcer treatment, and barring the fact of atrophy from non-use and tenderness of the soles of the feet, which will take some few days to disappear, (massaging with alcohol doing much to alleviate the condition of affairs) the patient is quite ready to take up active life. It is essential to follow out the detail of the usual treatment and great care is necessary in the diet for a long period of time, and the patient should rest in a recumbent position on the right side following the taking of food.

The writer is making some experiments on the applicability of duodenal feeding in cases of mid-line ptoses. I am sure that much higher caloric values can be given to the individual through the tube than he is able to take by mouth. Of course during the treatment all the adjuvant measures of ulcer treatment are used, such as poultices, elevated bed, etc. Bear in mind the fact of the loss of tonus; and as soon as possible after the stomach will bear it, return to a non-fluid diet, the amount of liquids kept down and more solid metals given.

The pains of ulcer while they are various in character resolve themselves as a rule in ulcer of the stomach; the sharp crampy pains which are characteristic of ulcer and those which come about from loss of tonus. I wish to bring forward the fact that already has been spoken of by Kemp of Copenhagen, that tardy periodic pain, or the so-called hunger pains of Moynihan occur as well with ulcer in the stomach and near the pylorus, and that the so-called line of symptoms which have been presented as characteristic of duodenal ulcers are in my opinion indicative of juxtpyloric ulcers and are not absolutely diagnostic of ulcer beyond the stomach. Occurrences of hemorrhage during the cure of ulcer places the patient at once in the medical class. Absolute rest and quiet must be insisted upon; the foot of the bed elevated; ice bags, etc., and hypodermics of morphine given.

Medical treatment.

The cases have been separated into the medical and surgical cases in the early part of the paper and there now must be made a difference in the various kinds a medical treatment. Three features should be determined, whether the activity is high or below normal, also whether there is any element of spasm in the case, if so it must be treated by medicine, for spasm raises an ischaemic area in the stomach which interferes with healing, and under such circumstances the ulcer will not repair.

Kussmaul's Bismuth Treatment.

If any food is being taken by mouth Kussmaul's Bismuth treatment, commends itself to most cases. I rarely believe it is

possible to follow the direct method of washing out the stomach and then giving the bismuth, but have substituted the sub-carbonate in place of the sub-nitrate because of its less toxic nature, and the sub-carbonate also neutralizes the excess acid, when present. I am inclined to begin it in doses of one dram three times a day, with extra two dram doses taken in a glass of milk before quieting down for the night. With the bismuth sub-carbonate we have also fully followed the requirements of the neutralizing method of DeVoe; but if the case is one that is showing marked hyposecretion we can add to the bismuth *magnesia usta* or select the proper alkali according to the condition of the bowels. I find that free gastric juice in the fasting stomach calls particularly for this line of treatment. I have already suggested Conheim's olive oil; where the oil cannot be readily taken I would suggest an oil of sweet almonds; really an emulsion of sweet almonds, made from the poundings of nuts with the water. In some cases the olive oil may be used with the stomach tube and large doses given. I have questioned though, whether the passing of the tube did not undo some of the good of the treatment.

Gehardt's Silver Nitrate Treatment.

The plan is to give this in one-quarter grain doses in water three times a day one half-hour before eating. This can be continued until 1-2 a grain is given three times a day. Treatment should be continued only for two weeks and then put aside for two weeks before beginning again. In some patients silver nitrate is apt to cause diarrhoea. In a patient who has arrived at the late period of the treatment and is tired of the diet, lavage of silver solution will aid in restoring appetite, and I have found it an aid in making permanent healing of the ulcer.

Later in the treatment one dose of one-quarter of a grain is given well diluted, in the morning, on a fasting stomach. This should of course be taken through a glass tube to prevent staining the teeth.

Atropine.

A particularly valuable drug to aid in allaying spasm. The mistake in using atropine has been in giving too large doses in

the beginning of the treatment. The best results obtained were through small doses, which can be carried over a very long period of time. I have been resorting to the use of one of two tablets of a composition of dried leaves 1-50 grain, or atropine 1-500 of a grain. This small dose can be taken for several months by the average patient and this treatment should be continued for a long time to obtain the best results. The much vaunted Carlsbad Salts I do not use at all, and feel they are over-rated as an aid in treatment of gastric ulcer.

Hort's Horse Serum.

Through the courtesy of the New York Board of Health, in the summer of 1913 I was enabled to give this treatment a very extensive trial. Prior to this time there had been extreme difficulty in giving this treatment in America due to the pure food laws making its production impossible; no data of it has been reported in America to my knowledge. Three cubic centimeters were given three times a day over a period of at least four weeks in twenty ulcer cases, two of which were of the hemorrhagic variety. From close observations of the eighteen non-hemorrhagic cases I feel that the hypotheses of Hort are not sustained and that these cases do as well under the more rational treatment. There were, undoubtedly good results in the two hemorrhagic cases, but I distinctly wish to emphasize that thus far its usefulness is confined purely to that type of cases and that its use in normal non-bleeding ulcers is of no avail. The particular reason of its more apparent use in hemorrhage cases is of course due to the increase of the coagulability of the blood.

Ox-Bile Treatment of Palfry.

The good and beneficent effects of gastro-enterostomy with regurgitation of intestinal contents in many cases has been the means of an effort to institute a similar condition of affairs with the administering of ox-bile in gastric and duodenal ulcers. Give 4 grains in pills which are keartin-coated, two or three pills to be given after meals for a week and then gradually re-

duced. I have had some excellent and encouraging results from this form of treatment.

Pancreatin has also been added by the author to more fully simulate the full effect of gastro-enterostomy. Whether they do more than neutralize free gastric juice is hard to determine but it is an efficient treatment.

Anaemia.

It has been my practice in these cases to give hypodermics of cacodylate of sodium, thus keeping drugs out of the mouth and not disturbing the stomach. Where we have need of medicines by mouth ovo-ferrum and neo-ferrum have more to recommend them than anything else. The hypodermics are given once each day for six days and then discontinued to be resumed later. Let me make a suggestion that anaemia cannot be judged by the appearance, as many times persons with all appearances have toxemia of intestinal stasis. Bolton gives sulphate of iron or Bland's mass but emphasizes that they must not be taken until a full diet is arrived at—denoting that they are irritating to the stomach.

Pain.

In these cases the rest in bed and proper diet will take away the symptoms of loss of tone. The use of bismuth will smooth out many of these cases if it is given about an hour after meals diluted in milk or olive oil. When spasm is the effect or cause of pain, atropine or extract of belladonna will stop it. Orthoform in five or ten grain doses will ease true ulcer pain. Olive oil in two tablespoonful doses coats over the surface and stops the pain. Most of these methods will not need to be instituted as with the proper treatment for the ulcer, that is rest in bed, etc., pain practically always disappears. This frequent disappearance of the pain by taking food; beginning at different times after meals, is the most diagnostic point of ulcer, for other gastric troubles will not respond so promptly to treatment. If pain continues after the properly instituted treatment, search for some complicating feature.

Constipation.

In my opinion this should not be dealt with, with anything else but intestinal lavage, barring liquid parafine and olive oil. All forms of cathartic medicines are distinctly to be avoided in stomach trouble, and while the Carlsbad water has been used the world over, is not to be recommended. All preparations of a like nature should be put aside for rectal enemas, thus serving two-fold purposes of bringing on bowel movements as well as cleansing the large bowel of the toxins of intestinal stasis, and upon which more and more stress is being placed as the causal factor of ulcer. Oil enemas, following the technique of Herschall will afford brilliant results in many cases.

Hemorrhage.

The first indication of treatment is absolute rest and quiet. The stomach must, as far as possible, be allowed perfect rest and quiet, as after the formation of the clot and stopping of the hemorrhage, the great danger is in the clot being disturbed by the motility of the stomach, either by peristalsis or the stretching of the stomach with loss of tone. A hypodermic of morphine should be immediately given. This fulfills all of the above requirements and overcomes the alarm of the patient, for there is no condition so terrifying to an individual as a profuse hemorrhage from the mouth, either haemetemesis or hemorrhage from the lungs. An icebag applied externally to the stomach also assists in quieting peristaltic activity. Pure styptic adrenalin in thirty drop doses by the hypodermic, frequently repeated depending upon the condition of the hemorrhage, is to my mind the best remedy. I have had excellent results with it, and have never yet found that it increases the blood pressure to a degree to cause the continuance of the hemorrhage. The drug may also be used by mouth, thus rendering local action on the stomach walls. While I have not seen it stated I believe its excellent effects are due to action of the musculature of the stomach, with contraction of the smooth muscle fibers producing the contraction of the organ with the squeezing of the blood vessels, and thus stopping the hemorrhage. Ergot and

ergotal have been distinctly disappointing in their action. Gelatine in two to ten per cent. solution by mouth, is suggested, but I would advise against its use in the stomach; but if it is employed would use a two per cent. solution sterilized and injected hypodermically. Lavage with ice water I have never employed. It is only a rare individual on which the tube can be used without motor spasms of the stomach being instituted, which is only making your hemorrhage worse.

Next to adrenalin the following prescription has been most serviceable: hydrastinine hydrochloride—grains 50—squa one ounce, of which fifteen drops may be used hypodermically, frequently repeated. This was of wonderful avail in the hemorrhage from gastro-enterostomy in my service at Cumberland Street. The measures so far outlined are all employed by hypodermic methods; thus we are using ideal technique, as our stomach is not disturbed by the injection of any substance, and remains absolutely quiet. Other methods to be suggested are the use of liquor ferri, in five drop doses. Calcium lactate can be given in ten grain doses every three hours and increases the coagulability of the blood. Bismuth subgallate in twenty to thirty grain doses. Bolton suggests turpentine in two to three dram doses in the white of an egg, which treatment I have never had any experience with. Gallic acid—ten grains in a teaspoonful of water with—drops—ten, sulphuric acid diluted; alum—fifteen grains in whey repeated every three hours; acetate of lead and opium—grains 1-2 each, and the hypodermic use of serum; details of which are gone into further in another portion of the paper. It has been suggested by one author that tincture of millefolium be given to reduce the blood pressure to such a point that hemorrhage will stop the lack of pressure within the walls. This method I have not employed and it is not advisable in an individual already depleted and weakened by an intense hemorrhage.

The treatment of hemorrhage has been gone into in some detail because when such a crisis arises the physician cannot have too many methods with which to combat such an alarming

state of affairs. With hemorrhage rectal alimentation is at once instituted and continued until all signs of bleeding have ceased.

It is apparent that the primary hemorrhage is rarely the cause of fatal results, but recurrent hemorrhages are very prone to cause death, therefore very great care must be exercised to make the cure of the primary hemorrhage thorough.—*The North American Journal of Homœopathy*, June, 1914.

EDITOR'S NOTES.

Merycism.

Merycism, or chewing the cud, is a rare phenomenon among human beings. It was first recorded in 1681 by Fabricius ab Aquapendente; he and some other writers of that epoch saw in it the mark of the beast, and even noted that merycising patients were apt to grow horns on their foreheads and the like. Nowadays it is more reasonably held to be an atavistic phenomenon, not due to an unfortunate maternal impression during pregnancy, as Peyer (1685) believed, or to gastric antiperistalsis, such as occurs in vomiting (Haller, 1764), or to pylorospasm. In 1904 Presslich collected 145 cases of merycism from the literature; most of the patients were adults, but it appears that some 30 were children; and Schippers has found records of 10 instances in infants to which he adds two new cases of his own. It is a curious fact that men seem to be more prone to rumination than women except in infancy; Wirtz found 10 women among over 140 merycists, while 7 out of 11 ruminating infants were girls. The habit is generally adopted between the ages of 5 and 15, and it appears that heredity, or perhaps imitation, is an important factor in its occurrence; it is not evidence of feeble-mindedness or idiocy, as has sometimes been supposed. Yet it is very much under the control of the nervous system. Some patients indulge in merycism only after partaking of certain kinds of food—vanilla ice, for example, or liquid and not solid food; infants may cease to ruminate when exhibited for demonstration purposes or when an X ray examination is to be made. It appears that there is an optimum quantity of food that should be given to these infants when merycism is to be provoked, which was about four ounces in one of Schippers's patients. There is no doubt that in infants the habit is a bad one, leading to chronic malnutrition. In none of the 12 recorded cases was the child up to its proper weight, and in several the temperature of the body was often subnormal, falling as low as 91° F. The outlook is less favourable when the merycism is combined with dyspepsia, as is often the case with infants.

The object of treatment in these patients must be to prevent the child from merycising. It should be given food that it does not care to ruminate, in quantities (usually small) that do not provoke rumination; being a neuropath, it would be kept quiet, and it is not likely to benefit by the exhibition of sedative drugs. As for adult merycists, Schippers indicates the necessity of determining how far rumination is akin to vomiting—a question, that might well be answered by X ray examinations. It appears that the adult patients themselves clearly distinguish between the two processes. To describe merycism as a reflex movement, or even as a “Bedingungsreflex” as described by Pawlow and Czerny, a conditional reflex dependent upon an association of ideas rather than any direct stimulus, does little to advance our comprehension of the phenomenon. Schippers points out that both his infant patients might begin to chew the cud while asleep, waking up at once, while, Wirtz states that merycism may go on during dozing; yet the true associative reflex can only occur in persons who are awake—*The Lancet*, July 25, 1914.

India.

Lunacy in Bengal.

Interesting figures are given in the annual returns of the lunatic asylums in Bengal for 1913 of the cures effected during the year under review. From the proportion of cures given below among the different types of insanity it would seem that the type of insanity associated with Indian hemp smoking yields more easily to treatment than any other type: insanity due to hemp smoking, 14.38 per cent. to total treatment; melancholia, 8.42 per cent.; delusional insanity, 6.60 per cent.; and mania, 6.25 per cent. The total expenditure of the lunatic asylums in Bengal in 1913 was Rs. 1,94,451.—*The Lancet*, July 25, 1914.

The Tomb of Avicenna.

Sir William Osler has recently suggested that the tomb of Avicenna should be restored. An account of a pilgrimage to the last resting place of that famous philosopher and physician at Hamadan is therefore especially opportunate. It is contained in the July number of the *St Bartholomew's Hospital Journal*. The pilgrim was Dr. A. R. Neligan, physician to H.B.M.'s Legation, Teheran. Abu Ali al Hussein ibn Abdullah abn Sina, to give the old Arab physician his full name, was born near Bokhara in 980 A.D. At 16, after studying mathematics, philosophy, metaphysics, and medicine, he was already practising as a doctor. At 17 he was appointed physician to the Amir of Bokhara. This post gave him access to the celebrated library of Bokhara, and thus enabled him to pursue his studies. After travelling in north-eastern Persia he settled at Hamadan, where he spent the rest of his life. He became physician to the ruling prince, Shams-ed-Dowleh. But, says Dr. Neligan, like many a Persian doctor of the present day, Avicenna took to politics and became a Minister. The sea of Persian politics has always been particularly stormy, and therefore it is not surprising that Avicenna was often in peril of his life, and was at one time thrown into prison. After a time he made his escape from Hamadan and took refuge in Isfahan, where the governor welcomed him and made him his physician. In that capacity he made several campaigns, and in the course of one of these, which was directed against Hamadan, he was attacked by colic, and thus it came to pass that he died in the town from which he had fled, and was buried there. Wherever Avicenna was and in whatever circumstances he found himself he was an indefatigable writer. His varied adventures did not prevent his going on with his great treatise, the *Kanun*, or canon of Medicine. In that work, which was divided into five books, Avicenna collected all that was best in the medical knowledge of his time. It was the textbook at the universities of Louvain and Montpellier up to the middle of the seventeenth century, and it is read in Persia, Arabia, and India at the present day.

It was taught in the royal university at Teheran as recently as twenty years ago. It was translated into Hebrew and Latin, and the Latin version went through thirty editions. Avicenna is said to have written in all more than 100 books, most of them dealing with medicine, but others with logic, philosophy, music, natural history, astronomy, and physics. His grave, says Dr. Neligan, is in a simple brick building near the steep banks of the river which flows through Hamadam. A little mausoleum of fire-burn bricks with a mud dome stands at one end of a small compound, surrounded by a low stone and mud wall. The building is square, but inside there are small arches at each corner, which give it the appearance of being eight-sided. The internal measurements are as follows: Floor, 15 ft. by 15 ft.; apex of dome from floor, 16 ft. The floor is paved with large square bricks. Immediately opposite the doorway is the tombstone, 49 in. long, 21 in. wide, and 24 in. high. The inscription is carved in large bold characters. It begins with the usual invocation "To Him who is and does not die;" this is followed by a verse from the Koran reciting the virtues of the Almighty. Then come lines of verse, in the translation of which, as well as of the verses that follow, Dr. Neligan acknowledges the help of his friend Moin-ul-Vazareh: "Worthy testimony upon earth of the omnipotence and wisdom of God, Abu Ali Sina sprang from non-existence into being in the year 373. He had mastered the sum total of knowledge in 391; in 427 he bade farewell to this transitory world." Then comes the usual conclusion to epitaphs on the graves of Mohammedan sages of celebrated men: "The death of Sheikh Abu Ali Sina, may his tomb be surrounded by light! 427."—*The British Medical Journal*, July 25, 1914.

Diagnosis of Frequency of Urination in Men.

A practical paper on this important subject appears in the *Journal of the Medical Society of New Jersey*, written by Dr. A. B. Stevens of New York. Dr. Stevens concludes his paper as follows :

1. To obtain a clearer knowledge of a patient's complaint of frequency of urination have him keep a record for 24 hours of the time and amount of every urination.

2. Large amounts at each voiding usually indicate a medical ailment ; small amounts, a surgical condition.

3. Make a practice of always having the patient void in two or more glasses. This is a very enlightening although simple procedure.

4. Small amount frequencies are due to

(a) a small bladder capacity ;

(b) residual urine ;

(c) lesions of the spinal cord ;

(d) irritation of the posterior urethra and trigone.

5. Most cases apparently in group (a) really belong in group (d).

6. In dealing with the latter class, differentiate between those having pus in the last urine voided and those having clear urine. The infected cases are usually renal or prostatic in the final diagnosis, particularly when instrumentation has not been done. Frequency of urination by night as well as day in a young person, with pus in the urine but no easily found bacteria, is probably due to renal tuberculosis and much time should be spent trying to establish such a diagnosis. The non-affected cases are usually prostatic.

7. Residual urine is due usually to prostatic obstruction or to a spinal cord lesion.

8. Prostatic conditions can be diagnosed usually without the aid of special instruments, and bladder calculi and neoplasms are often suggested by the history.

Beyond this, in the accurate detailed localization of the causes of frequency of urination, one may not except to go without considerable practice in the use of the endoscope, the cystoscope and the urethral catheter.—*The North American Journal of Homœopathy*, June, 1914.

The Cost of Pasteurizing Milk.

Many of the improved methods of milk production required by present day standards entail a material addition to the cost of production. It costs money to keep dirt and an excessive quantity of bacteria out of milk. Pasteurization of milk, on the other hand, can be efficiently carried out at a negligible expense; in a properly equipped and operated plant, the added cost need not exceed a third of a cent a gallon.

Commercial pasteurization is effected by two processes—the “flash” process and the “holder” process. In the former, the milk is brought to 165 degrees F. and kept there for a moment only; in the “holder” process the milk is kept between 135 degrees and 145 degrees for about 30 minutes. The former is less efficient and more expensive, since a more intense heat is required, and then the milk has to be cooled through a large range of temperature.

In many plants the cost is allowed to exceed the figure given above because no use is made of exhaust steam and too little attention is paid to the escape of steam at ill-fitting pipe-joints.

While pure fresh milk is the ideal, it is so hard to obtain in large centres of population, that public health authorities are warranted in insisting on the pasteurization of the ordinary grades.—*The North American Journal of Medicine*, June, 1914.

Double Monsters.

Baudouin (*Sem. méd.* No. 47, 1913) describes a new pair of craniopagous twins which was recently on public exhibition. The monstrosity is named Émi-Lisa Stoll, and the two subjects are, as always, of the same sex, in this case feminine. The union is very marked, and comprises at least the two parietal bones in their entirety, but the faces of the two infants are not in the same antero-posterior plane, the two planes forming an angle of 90 degrees—that is to say, that when one infant is looking north the other is looking nearly east. In August, 1913, the children were 20 months old. They are very healthy, and at birth one measured 48 cm., the other 47 cm. Their bodies present no anomalies, except that the lower extremities are a little atrophied owing to the fact that it is impossible for the children to walk. The mother is strong and healthy, and has had three normal children (boys). The father is of middle height, though rather thick-set; there are several dwarfs in his family, and he has a sister whose face and body are covered with lanugo. The pregnancy was normal. The little girls are much alike; the hair is of the same colour and character, and the physical characteristics are similar in other respects. The capital point is the angle of the two heads. There may have been a kind of torsion of one body on the other before the osseous transformation of the parietals; but the author thinks it probable that in reality there was no such torsion, but rather a direct welding, even from the beginning of the development of the two beings. Most of the cephalopages are feminine, especially those which have lived, and the living ones have generally been born of multiparous mothers. It seems certain that in this case there are separate brains. Virtually the children act independently; one sleeps, while the other wakes, one laughs while the other cries. When awake they play together by throwing toys at one another over their heads. In character they are alike. They have lived longer than any other recorded case. No attempt at operation has yet been made in these cases, but the author thinks that in the present

state of cranial surgery an operation might be successful, provided it were performed between the first and second year. Le Filliatre (*ibid.*, No. 2, 1914) showed a pair xiphopagous twins at the Academy of Medicine. This is the first living xiphopage born in France for 500 years. The mother is nine years older than the father; her other children, both this and her former husband, are normal. At the confinement the one child presented by the vertex, the other was transverse; by version of the latter the two were delivered simultaneously, one by the head, the other by the feet. There was one large placenta and one cord for the two infants. The two little girls (Madeleine-Suzanne) are joined by a bridge uniting them at the lower part of the thorax and the upper part of the abdomen. On the median and inferior aspect of this bridge is the umbilical cicatrix. The bridge is 5 cm. long and 14 cm. in circumference; it is covered with skin and presents a hard portion of cartilaginous consistence, below which are two cords the size of goose quills stretching from one child to the other and not adherent to the umbilicus; between these parts is easily compressible tissue, in which intestinal movements can be felt whenever the children cry. The type is thus the same as the Siamese twins. Though their abdominal cavities communicate, the children have each an individual and complete organism. The measurements of the height, thorax, cranium and extremities are different, Suzanne being in all respects the larger. Madeleine's heart beat is 120, Suzanne's 130. The temperature of the two is hardly ever the same. The cry is different, and the nurse can tell which is weeping without seeing them. Madeleine's face is round, Suzanne's oval, but the colour of the eyes is the same. The blood count differs, Madeleine showing a notable increase of small mononuclear lymphocytes, so that there is evidently only a small exchange of blood at the point of union. Radioscopy shows that the hearts are independent and of normal aspect; the movements of the diaphragms are not synchronous. There are two stomachs, normally placed, the air space in each being large. The two small intestines are independent. In the upper part of the bridge of junction

is a strongly cartilaginous band joining the two xiphoids, below this is small intestine. During deep inspiration and straining loops of the small intestine of Madeleine enter the abdominal cavity of Suzanne, returning to their proper place during expiration. No large intestine enters the bridge. The livers are independent and of normal aspect.—The *British Medical Journal*, July 4, 1914.

Anomalies of Pigmentation Amongst Negroes.

Stannus has recently described some very interesting anomalies of pigmentation amongst natives in Nyasaland, and has presented an interesting study of albinism in general. From the numerous photographs which are given, absence of pigmentation seems to be fairly common amongst natives in Nyasaland. The condition generally seen is local and limited, but may, however, take on a general characteristic, resulting in a pure white negro. Such cases are seen in other parts of the world; for example, they are not uncommon in the West Indies, all varieties of piebalds and spotted cases existing. It is not, of course, easy to determine whether a case is one of albinism or of leucoderma. Dr. Stannus believes that melanin, to which skin pigmentation is due, is not a direct (and probably not an indirect) product of haemoglobin but of the splitting of a complex lipid substance, possibly as the result of a ferment action, akin to the formation of pigment from tyrosin by tyrosinase. The complex granules containing the lipid substance are, he believes, produced as the result of the metabolic activity of the individual cells of the epiderm. Melanin in the cutis is probably derived from the epidermis; the explanation of its more or less complete absence in albinism is by no means easy. He considers Pearson's hypothesis a masterly summing up of the position, and that it is certainly warranted in the light of his own series of cases.—The *British Medical Journal*, July 25, 1914.

The Museum of the Royal College of Surgeons of England.

The conservator of the Museum of the Royal College of Surgeons, Professor A. Keith, has issued his annual report, and the show of specimens added during the past year is now on view, and will continue to be displayed until the end of the month. The anthropological collection has received many highly important additions, skulls of ancient Egyptians, of Stone-age inhabitants of England found in their flint mines at "Grime's Graves," near Weeting, Northfolk, of Anglo-Saxons, and also, and not the least significant, of modern English people. These show more clearly than is generally suspected how certain definite changes have occurred in the physical condition of the people in recent centuries. Dr. T. Wilson Parry has presented a set of preparations made by himself to show the implements and methods of trephining practised by people in a stage of stone culture. Mr. Barrington Nash has presented a cast, undoubtedly authentic, of the skull of Robert Burns. A large number of preparations throwing light on the genitals in relation to changes in external sexual characters are preserved in the museum. During the past year a "mule" pheasant has been graciously presented by His Majesty the King, and in this instance the rudimentary genital glands, probably ovaries, have neither oviducts nor testicular ducts, and therefore the bird is regarded as asexual or neuter. Mr. E. T. Newton, F.R.S., has presented the first of his "reconstruction models," made up of plates of wax, enlarged from a corresponding series of microscopic sections, and put together so as to make one enlarged model of an embryo or organ. As usual, there are many additions to the pathological series. Mr. H. A. T. Fairbank presented to the Museum this year a preparation showing "Sprengel's shoulder," a congenital elevation of the scapula, bilateral, and occurring in a female infant who died from marasmus when six weeks old; and Dr. J. Kingston Barton has given to the collection some skiagrams showing an apparent disappearance of bone tissue in the clavicle and a congenital hiatus in the upper part of the front wall of the thorax. Space prevents us from any mention of numerous other additions of high interest. The annual display and the conservator's instructive report well deserve the attention of the profession and of scientists. The exhibition runs a risk of being overlooked now that Fellows of the College mainly vote by papers, so that there is no longer a great concourse of visitors at the College on the day for the election of members of Council.—*The Lancet*, July 4, 1914.

CLINICAL RECORD.

CASES FROM PRACTICE.

ANGINA PECTORIS.

By R. S. Stephenson, M.D.

Case 1.—Mrs. S.—, elderly. For years has been invalided and much of the time confined to her bed by these attacks. They recur at least once a week, and frequently begin on lying down in bed. The pain is most severe, like a *band of iron constricting the left side of chest* in the heart area. There is also fullness in the epigastrium. Used to get intense congestive headaches with relief from nose bleeding.

She has *burning on the vertex*; *crawling itching like worms on occiput* and vertex; *burning of the feet* which she puts out of bed.

R. Sulphur 200 and Sac. lac.

Two weeks later she reports: "Much better. I feel like a new person."

Three months later says: "I have been able to get about and do a little housework; have had no more attacks and feel very grateful."

Still has hot feet. Rept. Sulph. 200 and Sac. lac.

Case 2.—Mrs. R., *premature senility*. Thin, spare, active temperament; has lately had to give up all her engagements owing to weakness and *trembling of the limbs* on the *least exertion*, worse mornings. Cough with hawking and retching in the morning.

She is a *warm blooded* patient, and has *burning of the palms of the hands*. *Faint and hungry at 11 a.m.* Very constipated.

The symptoms in italics indicate the remedy which was Sulphur 200 given in a single dose. Seven weeks later she reports better in every way. Constipation a great deal better, but sleeping badly; easily aroused. The trembling is practically gone. Still uses very light bed clothing. Rept. Sulph. 200 one dose and Sac. lac.

Case 3.—Mrs. G., *Menopause*. Gets very nervous with intense flushing to the face. On waking she has *heat and burn-*

ing of face and hands ; must get up and walk about. Is very weary at times, though in health is energetic. She is often chilly, goes to fire, *then too hot and wants to be outside.*

Better when occupied and feels she must be busy and hurried at work. Choking about throat, wants to loosen collars.

R. *Lachesis* 200.

A month later she reported some improvement at first, but the symptoms had returned as badly as ever. Further symptoms obtained were the *flushes rise to the face from the chest.* She likes *very light bed clothing*. The face gets *purple*. R. *Sulphur* 200 and *Sac. lac*, which was followed by prompt and lasting relief.

Case 4.—Mr. F — *Chronic Dyspepsia*, hæmorrhoids. Is thin, lean, dyspeptic for thirty years or more. He diets very strictly, but never eats anything without subsequent discomfort. Never eats a hearty meal, takes only "health" foods. Has passed a renal calculus. Very constipated, always uses enema.

Very large piles which prolapse when standing and always during stool.

Hurrid and anxious in work.

Got some benefit from *Nux* and other remedies. More from *Sulphur* 1m. Then he gave up his sedentary occupations and went to live in the country.

Two years after he wrote, "I am generally better from my present country life, but still greatly troubled with the *piles which prolapse when walking or standing* and get very sore. Have also been much troubled with *boils.*"

R. *Sulphur m.m.* one dose and *Sac. lac*. Three weeks later he writes: "I have never thanked you for your letter and medicine. Since I began it the piles have not once come down and I am very grateful. I have had only one boil on the perineum, and the powders have made a more upright man of me."

It is interesting to note that he had had *Sulphur* before, but without half the benefit that he derived from this extreme dilution. Many such experiences have proved to my own satisfaction that the greater the dilution the greater the remedy.

Why it is so, science a century hence may be able to explain.—

The Homœopathic World, May 1, 1914.

Gleanings from Contemporary Literature.

SOME CASES OF RESPIRATORY DISEASE TREATED WITH AUTOGENOUS ENDOTOXINS.

By T. G. STONHAM, M. D. LOND.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—The cause of my reading this paper to-night is to be found in one read exactly two years ago before this Society by Dr. Hare, entitled “A Few Remarks on Vaccine Therapy.” In that paper Dr. Hare treated of vaccines prepared and administered in the ordinary way, that is to say, of micro-organisms grown on a culture medium, emulsified, standardized to a certain number of organisms in a known quantity of fluid, and then administered hypodermically in stated doses at varying intervals.

Towards the end of his paper Dr. Hare made this remark: “In two instances I have prepared vaccines which have been ground and triturated. They were endotoxic vaccines. They were prepared for Drs. Stonham and Wheeler, and it will be interesting to hear their reports. With the strictly endotoxic organisms and the preparation of vaccines from them I have not dealt in this paper at all.” Two years have elapsed since Dr. Hare read these words to the Society, and I am now here in answer to his invitation to give my report of such cases as I have treated with endotoxins prepared by him during that time. The cases are only seven in number, and it may be thought that they are too few to be worth bringing before the Society. But they are all I have treated and, therefore, have the merit of being unselected. The preparation of endotoxins is an expensive process, and it is not possible in private practice to find a large number of patients suffering from one class of diseases—such as the respiratory, which I am bringing to your notice this evening—who are suitable for treatment with endotoxins, and can at the same time afford to pay for it. It is certain that any experience of homœopaths of the effects of endotoxins must, if it is to be an adequate contribution to general medical knowledge, be based on a large number of cases, and this could only be done by one or more of the physicians of the London Homœopathic Hospitals, or of one of our provincial homœopathic hospitals. I would suggest it as a suitable subject for a paper in the next volume of our Hospital Reports. In the meantime, possibly, my few cases may be of interest.

I learn from Dr. Hare that his method of preparing the endotoxins is as follows : The micro-organisms are grown on various media, but most usually on blood agar or acetic agar. An emulsion is then made of a small portion, about 4 c.c., of the growth, and this emulsion is shaken in the mechanical shaker for half an hour and then swung in the centrifuge. The bacteria at the bottom of the centrifuge tube are agglomerated in a sort of paste, and this is taken out and examined to find out the number of bacteria present in a cubic centimetre. It is then standardized so that the total number of bacteria per cubic centimetre is 50 millions. The bacteria are then ground in the grinding apparatus for twenty minutes, the apparatus during the process being kept at or below freezing point by means of an ether spray. The ground bacteria are removed and made up with proof spirit to any required dilution, the strength of 50 millions to 1 c.c. being regarded as the mother strength. When several micro-organisms are present and a mixed endotoxin prepared from them, the micro-organisms are grown and standardized separately, and are then mixed in equal proportions, but so that the mother strength contains 50 millions of the mixed bacteria to 1 c.c. My endotoxins were all mixed endotoxins, and were sent to me in the 4x and 30x dilutions. They were prepared in the pathological laboratory of the London Homœopathic Hospital.

Case 1.—A. B., aged 32, had when an infant a generalized eczematous eruption for which he was treated and cured by Dr. Neatby. He came under my care when he was about 4, and with intermissions I have had charge of his health ever since. His father had died of phthisis. His mother had good health. He has at no time had any tubercular manifestations, but ever since I have known him he has been subject to attacks of bronchial asthma, and during his childhood not a year passed by without him having three or four fairly severe attacks, lasting from one to three weeks. They did not seem to have any particular relation to weather or to diet, but whenever he caught a cold it always ran on to an asthmatic attack, with a good deal of bronchial secretion. It was of the moist bronchial variety mainly, but sometimes there was a period of dryness and spasm before the secretion was formed. When he was about 16, I left Ventnor and ceased to attend him for a few years, but he came under my treatment again when he came to live in London. At first the change away from the sea to the more bracing climate of North London effected considerable

improvement. The attacks were more seldom and less severe. But after a time his improvement wore off, and the attacks became as frequent and severe as ever, and were inclined to be more spasmodic than they used to be. For all this period, from childhood to 30 years of age, he had rarely had any but homœopathic treatment, and was given the usual medicines, amongst which *nux vom.*, *grindelia*, *antim. tart.*, *kali iod.* were the most prominent, but he must have been given at one time or another pretty well all the remedies that have been used in our school for asthma and bronchitis. In the summer of 1911, during the very hot weather in July of that year, he had a very bad attack of spasmodic asthma. He became so ill that the doctor who was called in was afraid he would collapse altogether. I was sent for and found him in a worse condition than I had ever seen him in before. The breathing was most distressing, the face cyanosed, and the pulse very rapid, 130 or more and small. There were no moist sounds to be heard in the chest, the attack being purely spasmodic. It really seemed as if the dilated heart would fail. However, in a few hours amelioration took place and some mucus began to be expectorated with alleviation to the breathing, and in a few days the patient was almost well again. About this time the International Homœopathic Congress took place in London, and Dr. C. E. Wheeler read a paper before it in which he related his experience in overcoming his proclivity to catch cold by means of an endotoxin prepared by Dr. Hare from his own secretions and which he took by the mouth every ten days or a fortnight. It occurred to me that it would be worth trying whether my patient's asthma would be benefited if an endotoxin were prepared from his expectoration and given to him in a similar manner. Some of his sputum was sent to Dr. Hare, who found in it the *pneumococcus* and the *Micrococcus catarrhalis*, and from a culture of these micro-organisms an endotoxin was made and dilutions 4x and 30 were prepared from it. My patient was given tablets moistened with the 4x dilution and ordered to take one every tenth day, early in the morning. The result was that during all the winter of 1911-12 and the summer of 1912 he was much better. Instead of having to be away from business for several days every few weeks on account of attacks of bronchitis and asthma, he had no attacks sufficiently severe to keep him at home. He had a rather bad attack of influenza in the summer of 1912, but this was accompanied by scarcely any asthma. In the winter of 1912-13 he had several bad colds

and an attack of pleurisy, but scarcely any asthma, and during the past year he has kept wonderfully well. He stopped taking the doses last Christmas twelve month, but began them again last summer. In September last he had a bad cold, but no asthma. The net result is that since commencing the endotoxin he has had no really bad attack of asthma. He has had several bronchial colds, sometimes with some, though slight, asthmatic breathing. The period of observation has been two and a half years, and since childhood he has never passed anything like so long a period without several distressing attacks. The endotoxin has evidently in this case been of great benefit.

Case 2.—This, like Case 1, is a patient whom I have known from boyhood, and who has always suffered from attacks of asthma, coming on fairly frequently as a rule, but at times leaving him for several months together quite free. The attacks were more spasmodic and accompanied by less mucous secretion than in the last case. They would be excited by pollen and dust, and he is always better at the seaside. He had a very tight attack in the spring of 1912. Encouraged by the result of endotoxin treatment in Case 1, I decided to try it with this patient and sent some of the sputum to Dr. Hare, who found it to contain the *Staphylococcus albus* and the *Micrococcus catarrhalis*, and made an endotoxin of the mixed organisms. The patient was given a dose of the 30th dilution every ten days. He has been much better ever since; has not lost a day's work. At times he has had slight tightness in breathing, but nothing more. The endotoxin was taken regularly every ten days for several months, then intermitted for several months and resumed. He has been under observation for two years since commencing the endotoxin. This also may be counted as a successful case.

Case 3.—Miss C., aged 51. She had always had good health till two years previous to my being sent for to see her on July 4, 1912. The catamenia ceased about two years before, and she also had an attack of influenza. Since then she had not been strong, became breathless on exertion and often had a feeling of tightness across the sternum with sensation of wheezing. On July 4, 1912, she woke up in the night in an attack of asthma and the breathing remained very asthmatical when I saw her in the morning. There was a good deal of cough, but little expectoration. A few moist sounds could be heard in the chest. These attacks continued almost nightly, and often in the day as well, for several weeks and were extremely

distressing. She had to sit up at night and pant for breath till almost worn out. The heart became dilated and the pulse habitually feeble and rapid. The usual remedies were given, such as aconite, ipecac., arsen., nux., kali iod., gelsem., grindelia, &c. Some improvement took place. She was given the services of a trained masseuse, who massaged her and taught her deep breathing exercises, with decided benefit. She became well enough to be sent away into the country, and went first to Kent, where she remained about the same. While there I gave her a dose of Case 2's endotoxin once a week, but no benefit resulted. She then went to Ilkley, which suited her better, and after some weeks she returned to London considerably improved, but after a week or two began to fall back again. In the meantime I had sent her sputum to Dr. Hare, who had found in it the *Bacillus influenzae* and the *Micrococcus catarrhalis*. On September 22, I gave her a dose of the 30th dilution of an endotoxin of these two organisms. There was an aggravated attack of asthma on the following night, but she afterwards rapidly improved both in breathing and in general health. Another dose was given ten days later without any aggravation. Improvement continued and no more doses were given. She could soon go for long walks, entirely lost her asthma and cough, and before long declared that she felt better than she had done for two years. At Christmas, 1912, she caught a bad cold, but the asthma did not return. On October 19, 1913, I note: "She has recently gone through another cold but without any return of asthma. After this cold she was given a single dose of her endotoxin to fortify her against the winter." She has gone through the past winter with one mild attack of influenza but no asthma, and her general health and strength have been excellent. The endotoxin in this case acted brilliantly, a single dose sufficing to entirely remove all traces of asthma, and for the period during which she has been under observation, nearly two years, there has been no return.

Case 4.—I was requested by Miss C., the last case, to see her sister, Mrs. V., who had for many years suffered from attacks of bronchial asthma. I saw her on April 30, 1913. She is a middle-aged lady of healthy appearance, with the exception of a tendency to venous congestion of the face, which I found on examination to be the result of emphysema. She told me that she suffered much from attacks of bronchitis and asthma, the chief feature of which is the abundance of the secretion produced, which causes a great deal of coughing and makes her very short of breath. There is also, I

gathered a certain amount of spasm of the bronchioles associated with this. Whenever she catches a cold it will speedily run on to an attack of bronchorrhœa and asthma, which will last from one to several weeks. She is troubled little, if at all, by these attacks when in Switzerland, and she consequently resides there a great part of the time. But whenever she returns to England she falls ill again and is troubled, more or less, all the time of her sojourn here. The attacks are favoured by cold and damp and by residence in the proximity of water, whenever the sea or river. This does not apply to residence on the shore of the Mediterranean, but is very marked at English seaside places. An examination of her sputum disclosed the presence of the *Staphylococcus albus*, the *Staphylococcus aureus* and the *Micrococcus catarrhalis*. Endotoxins 4x and 30 were made of the mixed micro-organisms, and on May 21 she was given a dose of the endotoxin 30, which was to be repeated every ten days. These first doses were sent to her in Switzerland. On July 9, I saw her again after she had returned to England. At that date the attacks had not returned, but on July 30 she wrote to me from Letchworth, saying: "I am sorry to say I have got asthma again. I had congratulated myself that I had escaped it this time in spite of having been at the sea at Havant, where I always get it. From the 12th to 22nd I was at Eastbourne and bathed once without ill-effect, but I felt the air too exciting and my nerves were irritable. A few days after coming here I found it an effect to keep pace with others walking. There was much damp in the air in the evening on Monday; yesterday (Tuesday) I felt very poorly with my breathing. To-day still more oppressed. Every expectoration, however slight, is a relief." I sent her some endotoxin 4x, a powder to be taken once in ten days and some natrum sulph. 6x to be taken every four hours. On August 15 she wrote from Keswick that she was better, had no asthma, but still a little yellowish expectoration. On September 12 she wrote from Minehead that the asthma was troubling her again; that she never goes to Minehead without having it badly all the time. She had left off the natrum sulph., and I advised her to take it again and to continue the endotoxin once in ten days. On October 1, she wrote from Minehead, saying: "The natrum sulph. was most efficacious and I am now free from asthma, though still having some cough and expectoration. The last week I have been suffering from neuralgia along the lower jaw, worse in bed at night, for which I have taken mercurius with relief. The weather has been very hot and oppressive, and I think it a great triumph that I have been free

from asthma." I sent her some more powders of endotoxin 4x, to be taken every ten days. On November 18, I heard from her at Lotchworth that she had had a cold with a considerable amount of expectoration, but no asthma. During this time she had continued the endotoxin, but had not taken any more natrum sulph. On December 2, I saw her again at Hampstead. She was then quite well. She was about to return to Switzerland. The net result in this case was that her attacks were less frequent and were considerably modified, they were shorter in duration and lost much of their spasmodic element. Though the natrum sulph. was useful I think the chief credit must be given to the endotoxin.

Case 5.—T. F. H., a man, aged 55. In March, 1913, he had an attack of influenza. He did not throw it off well and a chronic cold was left behind, with much secretion of mucus at the back of the nose and in the larynx which he was constantly coughing and hawking up. The secretion was thin white mucus. In addition to the local trouble he felt out of sorts generally and very depressed. He could take no interest in life and everything was a bore. Numerous remedies were given, especially arsenicum and kali bichromicum. He also on June 3 was given a dose of the endotoxin of Case 3. No good resulted. His sputum was then examined by Dr. Hare, who found the *Bacillus influenzae* and streptococci, and an endotoxin was made from these. On June 22 he took his first dose of endotoxin in the 4x dilution early in the morning. In the afternoon he came over feeling exceedingly ill and prostrate. He described himself as feeling utterly demoralized. He was better the next morning. Soon his spirits became better. He felt much better in himself and lost his depression, the cough was less, but the mucous secretion in the throat and larynx remained. He took a second dose on July 7 and a third on July 30. These subsequent doses produced no reaction, nor did they influence the secretion. Seen on September 12, his general health was excellent. His knees, in which he had twice had synovitis, and which used to give him a good deal of pain and difficulty if he walked much, had ceased to trouble him and he could walk eighteen or twenty miles, but he still brought up mucus from the larynx and posterior nares. The patient is of a somewhat gouty diathesis, subject to osteoarthritis and to anal irritation, and easily upset by indiscretion in diet which, however, he carefully avoids. I gave him, on September 12, nat. mur. 12 in frequent doses. On October 3 he was much the same, and I then put him on endotoxin 30, two doses at ten days' interval. The

secretion gradually lessened and had almost gone, when in February he caught a fresh cold and the symptoms returned. He was given a dose of endotoxin 4x.

Case 6.—H. S., aged 45, usually resident in Brussels, has for the last three or four years suffered from a troublesome laryngeal cough and some shortness of breath on exertion. In April of 1913 he had an attack of what seems to have been influenza, from which he speedily recovered and after which his cough disappeared, but he immediately afterwards was attacked with broncho-pneumonia, pneumococci being found in the sputum. He was ordered to a sanatorium in the Ardennes where he stayed for a month during May and June and made a partial recovery. On July 11, 1913, while in London, he consulted me, and not being at all satisfied with his condition I requested a consultation with Dr. Wheeler, which took place. The bases of both lungs were oedematous, with sounds of sticky crepitation, the expectoration was copious and yellow in colour, there was dyspnoea on exertion and a good deal of cardiac weakness. He was ordered arsen. iodidi 3, pil. ii. ter die and lycopodium 30, mv nocte. maneque. Some of the sputum was sent to Dr. Hare for examination and was found by him to contain pneumococci, *Staphylococcus aureus* and streptococci. An endotoxin was made from cultures of these organisms and a 5x dilution was ordered to be taken in $\frac{1}{2}$ drachm doses every tenth day, early in the morning. The first dose was taken on July 24 at 4 a.m. After 3 p.m. he felt heavy and had a headache for the rest of the day. This was all the reaction from this dose. The next day he was in better spirits and less short of breath, but there was still much thick yellow expectoration. The second dose was taken on August 3, ten days later. The reaction was greater this time, and he felt very poorly all day and the greater part of the next day. After that the expectoration lessened and became altered in character, being only very slightly yellow. The wheezing in the trachea, which had annoyed him a good deal, departed. There was still much emphysematous crackling in the lungs and sticky crepitations could be heard at both bases to halfway up the lungs. On August 13 he took the third dose at 2 a.m. He felt very unwell all day with a feeling of pressure over the cardiac region. There was expectoration of some blackish and then dark brown thick sputum. He was rather better the next day, but had not got over the effects of the dose. On August 16 he went to Hindhead. Some rise of temperature—100–101.5° F.—occurred for a few days and he had a sharp pain in the

chest on coughing. Dr. Wheeler, who examined him subsequently, thought he had had a slight attack of pleurisy. After some days' illness the temperature returned to the normal and he began to improve again. The reaction from this last, the third dose, had been so severe that I decided to give him a rest from the endotoxin for a time and when it was resumed to give him the 30th dilution instead of the 5x. He was given silica 6x *ter die*. I heard from the patient on September 6 that he was still improving and had much more refreshing nights; some sweating in the lumbar region; expectoration thin and easily detached; appetite good. On September 23 he was still improving. Three doses of sulphur 2 given in one day had the effect of a stimulus, making him feel better and brighter. I thought he was now well enough to take another dose of endotoxin and he was given a dose of the 30th dilution to take on the 28th. The effect described in his own words, was as follows: "I took the dose on September 28 at 6 a.m. and rested all day. I did not feel so miserable as after the last dose, but spent most of the morning coughing and brought up a great deal of mucus. There was also a great amount of grating noise in the larger bronchi. This continued all day with a temperature of 100° F. I went to bed early and the temperature got down to normal about midnight, but I had a restless night with a considerable amount of heavy sweating and a quantity of thick expectoration when I woke in the morning. I kept quiet all the next day and the temperature remained just about normal, but I felt an absolute rag." A subsequent letter carried on the history as follows: "I went to bed on the 30th about 10 p.m. and got a long, undisturbed, refreshing sleep of over eight hours, waking up quite chirpy. I have taken things easily and spared myself all I could, but what I have done has been done more easily and I have felt in better spirits. In spite of, or perhaps in consequence of, last Sunday and Monday's upset the expectoration has certainly diminished, and it is seldom I get a fit of coughing except after an effort of some kind. I have had no more fever."

So far we had got on fairly well, though with far more reaction from the doses of endotoxin than was desirable. Each dose of the 5x dilution caused a severer reaction than the previous one and the dose of the 30th after a long rest from endotoxin had also caused severe symptoms. It seems as if a state of anaphylaxis had been set up and that it would be unsafe to pursue the endotoxin treatment further for the present. But his lung symptoms had materially improved cough and expectoration having almost ceased. I ought, I

think, to have left off all medicines, but the desire to do something more led me to give him three more powders of sulphur 2 to be taken in one day. They had apparently done good before and I thought they might again. The result, however, was disastrous. He wrote on October 8: "I duly took your powders on Sunday at 6 a.m., 10 a.m. and 2 p.m., but fancy they must have been stronger than the last triplet, or else I have not recovered from the endotoxin and am weaker. It is not the cough and expectoration—they are better; but I am in a high state of nerves and had a very disturbed nervy night last night, and considerable increase of spinal sweating both yesterday and to-day. Walking about Tournai yesterday the heart seemed troublesome and I had to pull up about every fifty yards for a rest, and also had one or two heat waves, accompanied by perspiration, pass over me towards 5 p.m. (these I had been without for the last two or three weeks). To-day I have been rather better. Your remedies appear to be more than I can stand, and you will have to give me lighter doses at present until I get stronger." I ordered him to leave off all medicine. On October 17 he wrote that he felt better on the whole, but the heart was troublesome on exertion and he had a heavy feeling in the lower abdomen. I ordered antimonium arsenicosum 6x ter die. He took this for two days, with the result that he had such profuse sweats at night and felt so ill that he had to leave it off. On November 1 he wrote to say he had nervous diarrhoea. It was evident that he was in a highly nervous state and I was glad to hear in a day or two that he had called in one of our Belgian colleagues, as I felt it impossible to treat the case any longer by correspondence. I have been kept more or less informed of his progress by himself and his medical attendant. His lungs have quite cleared up, but he has become more breathless on exertion, weaker, and more nervously depressed. The heart's muscle seems to be affected. There is no dilatation, but I am told that the auricles are functionally disordered. His condition is considered by his doctor to be so serious that he has forbidden all work for six months and ordered him to the South of France for rest and change. He is now at Mentone. This is an unsuccessful case. The lung condition for which the endotoxins were prescribed was benefited, but a condition of hypersensitiveness of the system seems to have been set up which is as bad or worse than the original complaint. Both the 5x and the 30th dilutions caused very severe reactions and each succeeding dose a greater reaction than the previous one.

Case 7.—This is the case of a young lady, aged 18, who in the early summer of 1909 was attacked with acute tuberculous pleuropneumonia of the right lung. After a long illness she recovered, with permanent damage from contraction of the right lung, but all cough and expectoration ceased and the temperature became steadily normal. The next year, in the summer of 1910, she had an acute attack of pneumonia affecting the damaged lung. This attack was subdued, but left the damaged area more extensive. Tubercle bacilli were present in the sputum during the attack. Since then there has been no further lung involvement and the disease may be considered to be arrested. There is ordinarily no cough or expectoration and the temperature is always normal or sub-normal. Weight is maintained. But whenever she catches a cold, which occurs about twice a year, she has a little cough and expectoration and the sputum on examination is always found to contain tubercle bacilli. These colds last one or two weeks, after which cough and expectoration cease. But last June while in Paris she caught a cold more severe than usual and the cough and expectoration did not quite clear up, though the temperature remained normal and she felt otherwise well. This went on till October, when I got Dr. Hare to examine the sputum. It contained pneumococci, *Micrococcus catarrhalis* and tubercle bacilli. A mixed endotoxin was made and the patient has since been taking a mixed endotoxin of those micro-organisms about once a fortnight. Cough and expectoration ceased after the second dose. There was a slight febrile reaction after the first dose. After the other doses there has been no reaction causing physical signs, but she fancies she feels not quite so bright as usual for a day or two afterwards. Though cough and expectoration have ceased I am continuing the endotoxin every two or three weeks in order, if possible, to assist the system to get rid of the tubercle bacillus.

This last completes the cases I have to bring forward. As far as any conclusions can be drawn from such a limited number of patients, I think I am justified in saying that autogenous endotoxins are remedies of great power. In none of my cases did they fail to influence the complaint for which they were given. Two of my cases obtained moderate benefit, two were markedly improved, in one case the result was brilliant, in one doubtful, and in one good as far as the lung condition was concerned, but bad in that a condition of general hypersensitiveness was set up from which he has not yet recovered. In five of the cases aggravations occurred after the first dose, and in one after every dose. It made little difference whether

the 4x attenuation or the 30th was given as to whether aggravation was caused; five cases were given the 4x dilution and two of these showed aggravations; five cases were given the 30th potency and there were three aggravations. As none of my doses were given hypodermically, but all by the mouth, the cases afford strong corroboration of the efficacy of vaccines given in that way, and prove that, at any rate in the case of endotoxins, hypodermic medication is unnecessary. My most successful case had only two doses. Most of the cases had fairly frequent doses, once in ten days or a fortnight. Whether anything was gained by such repeated dosing is doubtful. It would certainly have been better if I had withheld my hand after the first dose in Case 6, in which the anaphylactic condition was set up, and the conclusion I draw from that case is that autogenous endotoxins are weapons that require very careful handling.

I must in conclusion express my thanks to Dr. Hare, without whose collaboration in preparing the endotoxins this paper could not have been written.—*The British Homœopathic Journal*, May, 1914.

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MATURITY AND OLD AGE.

EDWARD BEECHER HOOKER, M. D.

I shall say little about the machinery of this Society, for the excellent reason that there is little to be said, since in most departments it is running smoothly without much friction and, I hope, you will agree, with a satisfactory output, both as to quantity and quality. I have, however, just two recommendations to make. It has proved extremely difficult to secure a chairman and papers for the Bureau of Psychotherapy. My predecessors have found the same difficulty. I see no good reason why a society devoted to physical therapeutics should have a bureau devoted to therapeutic measures which are not physical, but on the contrary exactly the opposite. I therefore recommend that the Bureau of Psychotherapy be abolished. The Institute has a bureau capable of efficiently handling this branch of therapeutics.

There is a branch of therapeutics which has been too much neglected, not only in medical societies but in medical schools as well. It is now assuming great importance and is being studied in institutions and laboratories as never before, and with corresponding increase of knowledge and practical results in treatment. I refer to the relation of food to health and disease. I therefore recommend that a new bureau be established, to be known as the Bureau of Dietetics.

I shall not attempt to give you a review of the year's progress in physical therapeutics, since that will be demonstrated in the work of the various bureaux and can better be told by the workers in those special fields. Instead, I lay before you a subject which has greatly interested me during the last few years and in which, in a very small way, I have made investigations. It is appropriate to this Society, since it touches upon the work of every bureau, even that of Psychotherapy. This subject is *Maturity and Old Age*.

Medical science has concerned itself very greatly with the problems of infancy and childhood and a vast deal has been learned about the physical and psychological phenomena of child life, the hygiene of children at home, at school and at play, its pathology and therapeutics. These studies and the increased knowledge of all that pertains to childhood have resulted in great reduction in morbidity and mortality, to such an extent that the average span of human life has been appreciably lengthened. Another less advantageous result is that many delicate children, who formerly died in infancy, now live to adult years, but never become robust and are poorly fitted to bear the burdens, physical and moral, which come with the stress of life when its responsibilities are reached. It should be said, however, that while many children are saved, who otherwise would have died, very many who otherwise would have always remained delicate have been brought into a higher state of health and have become stronger and more efficient.

The other end of life, old age, has not been so thoroughly studied, nor have we given sufficient attention to the problems of maturity, that portion of life just before old age, when ripe experience should bear the fruits of efficiency of body, mind and spirit. How noble, how inspiring a spectacle is a human being, man or woman, who has reached mature years in vigorous health with clearness of vision (and not of the eyes alone), decisive judgment, keenness of mind, sweetness of spirit, a broad outlook in life, a wide charity and a high courage! On the other hand, how sad a spectacle is that of a man, arriving at the age of

highest efficiency, and then beginning to deteriorate before his time. Little by little his powers wane; his power of endurance decreases, he becomes more easily tired, especially if he hurries or walks up hill; then he notices that he gets out of breath; he cannot concentrate his mind as he used to; his brain tires easily; his memory becomes poor. Saddest of all is the moral deterioration. A man who all his life has been of exemplary conduct, at least so far as is known, a faithful husband, a devoted father, probably a church member, perhaps a deacon, or even a clergyman, becomes involved in some sexual irregularity. In the majority of cases he may escape detection, but many times discovery ensues; perhaps he dies suddenly of apoplexy in a hotel or boarding house, in the company of some women not his wife. What a heart-rending termination of a hitherto unblemished life! What infinite sorrow does he bequeath to his wife and children, no matter how large his estate may be. Why does one man end his career in this degraded manner and another pass from efficient maturity into honorable old age? He gradually becomes weaker physically, but nobler and more spiritual as he nears the end, until he falls asleep and wakes with the clear vision of the spirit life, just beyond the confines of earth. It is well worth our while to study the phenomena of maturity and old age, and learn, if we can, the reasons for these vastly different terminations of life.

It is possible, of course, to scarcely more than touch here and there upon so vast a subject, which would require a large volume for anything like adequate treatment. I shall therefore consider briefly only two phases of it,—arteriosclerosis, which is after all the cause of most of the phenomena of premature old age as well as old age itself, and the sexual perversions of old age. I shall treat those two phases from the standpoint of the clinician, giving my own experience, meager though it be, rather than that of the pathologist and laboratory expert. Arteriosclerosis is hardening of the arteries. Here, however, I must call in the pathologist for help:

“It begins with a hyperplasia of the connective tissue of the inner coat, with stiffening of the vessel, thickening of the inner

coat and diminution of calibre. The circulation in the arteries themselves is impaired and their nutrition interfered with and degeneration follows. The intima becomes soft, fatty deposits occur and atheroma follows. Later changes consist of waste of muscle fibres, hardening of the outer coat, calcareous deposits in the middle and outer coats, ending in calcification."

This hardening is a normal process of advancing years and becomes pathological only when it occurs prematurely.

An almost constant accompaniment of arteriosclerosis is high blood pressure and it is particularly to this phenomenon that I desire to call your attention. High blood pressure and arteriosclerosis are not synonymous terms. The latter may occur without high blood pressure, and high blood pressure is often present without the slightest hardening of the arteries, so far as the fingers are able to discover, that is to say, so far as the clinician can determine. From the clinical point of view, we therefore divide high blood pressure into two kinds; one with organic changes in the arteries, true arteriosclerosis; the other without such hardening, a functional disturbance, depending on other causes, diseases functional or organic, as it may be, of other organs, such as the thyroid, suprarenal glands and the digestive tract. In some cases there is no discoverable disease in any organ.

True arteriosclerosis itself may be divided into two forms; one, in which there is no disease of kidneys or heart; the other, in which the heart, or kidneys, or both, are diseased, hypertrophy occurring in the former case and interstitial nephritis in the latter.

I used to believe I could detect high blood pressure by the fingers, but it cannot be done. The pulse may be perfectly compressible and feel actually weak, yet the sphygmomanometer may show 170 to 200 mm.

Much has been said concerning the danger of high blood pressure. In my opinion the danger may be exaggerated. It is certainly unwise to frighten a patient, especially a woman of fifty

or sixty years, by telling her that her blood pressure is high. I find among my patients an alarm and anxiety on this subject is positively harmful.

We do not yet certainly know what is the normal pressure for middle life and old age. It is certain there are some persons over fifty years of age who are absolutely well by every test that we can apply, whose arteries are soft and flexible, yet their pressure is 180, 200 or even higher. These instances are of course exceptional, but every physician who is studying this subject and taking pains to examine as many people as possible has met such cases.

What is the standard of health? I have adopted the rule of adding 100 to the age of the individual as the normal rate. Thus, a man of twenty has 120; at thirty, 130; at forty, 140; at fifty, 150; at sixty, 160; at seventy, 170. When the pressure rises above 170 at any age it should be looked upon as beyond the normal range, except in exceptional cases, as before noted. It is understood, of course, that these cases are normal only when there is no heart disease and the kidneys are not affected. It should be borne in mind, although there may be actually no hardening of the arteries in these cases, that one of the causes of sclerosis is the increased blood pressure and that the increased friction of the blood stream upon the inner coat of the arteries is liable to start the hyperplasia, which is the initial process of sclerosis. Therefore, while it is true that the dangers attending high blood pressure may be exaggerated, it is none the less true that when such pressure exists it is our duty to discover, if possible, the reason for its existence, to remove the causes and lower the pressure by appropriate treatment. It is only in exceptional cases that there are no symptoms other than the high pressure itself. Usually there is headache, with a sense of pressure in the head and a feeling of confusion; occasionally dizziness and impaired sleep; the pulsations of the heart are felt throughout the body and there is undue shortness of breath on exertion.

It will be exceedingly helpful if it can be ascertained just what type of case is most liable to apoplexy. Theoretically, the

case of inelastic, brittle, calcareous arteries should be the ones to have cerebral hemorrhage. Yet we find just such arteries in old people, many of them having been in good health to extreme old age. On the other hand, men and woman in the early sixties, whose arteries are soft to the touch, succumb to apoplexy. The hardness of the artery is of less importance than the pressure within it. The spots of softening, or of atheroma in connection with increased pressure, would seem to be the most dangerous of all conditions and the most difficult to detect.

The experience of the large life insurance companies is of value in determining the relative danger in increased blood pressure. Most of them refuse all cases, no matter what the age, whose pressure is up to 170 mm. Some refuse those over 150. Their statistics show that in cases averaging 171, the death rate is 153% of the normal expectation; the deaths occurring most frequently from apoplexy, nephritis and organic heart diseases respectively.

The causes of arteriosclerosis and high blood pressure are not fully known. It is highly probable that the use of alcohol is one of them, although the researches of Cabot have thrown doubt upon this point. I am convinced that over-eating, especially of animal food, is an important causative factor. After reaching maturity less food is needed than during the earlier and more active years, yet few people realize this, and continue to eat as heartily as when young. Assimilation and elimination are less complete, fat is deposited in the tissues and irritating products are retained in the system. Beyond question, the stress and strain of modern life, with its anxieties and worries, especially the latter, are a cause of premature ageing. Syphilis, gout and lead poisoning are also causes of arteriosclerosis.

The diagnosis of high blood pressure is of course simple, if an instrument of precision be employed to detect it. Fingers are not to be trusted. In neurasthenia the blood pressure is lower than normal, yet, strange as it may seem, the symptoms attending high blood pressure have been mistaken for those of nervous prostration.* Since making routine use of the sphygmomanometer

I have been surprised to discover that cases that appeared to be neurasthenic are actually suffering from high pressure. This experience exactly tallies with the result of the employment of hemoglobin tests in diagnosing between neurasthenia and anemia. Neurasthenics are usually pale and have the general appearance of anemia, whereas the blood test often shows the hemoglobin to be 90% or higher. It is my invariable rule in office practice to take the blood pressure and make the hemoglobin test in every case requiring a general examination.

Thus far we have considered systolic pressure only. The diastolic pressure is very difficult to determine by a gauge instrument, like the Tycos, for instance, which, however, is an excellent and reliable mechanism for registering systolic pressure. A stethoscope attachment is necessary for the determination of diastolic pressure. This pressure is regarded by many investigators as of greater significance than the systolic. The difference between the systolic and diastolic pressures is the pulse pressure, which is an important factor in blood pressure, perhaps the most important of the three, but its significance has not yet been fully determined. The most we can say now is that the normal pulse pressure varies from 25 to 45 and that anything below 20 or above 50 is pathological.

The treatment of high blood pressure is not at present satisfactory. The main resources at our command are to decrease the total amount of food consumed, if it be excessive, and especially to reduce, or take away entirely, all meats; coffee and alcohol should be forbidden; elimination should be kept up to the normal, especially from the bowels. The value of autocondensation in reducing high blood pressure is beyond question, especially in uncomplicated cases. In cases of arteriosclerosis with nephritis, this modality should be employed with great caution, since the well-being of the patient will be endangered if the pressure is reduced too much. I feel certain that in such a case a reduction from 230 or 240 to about 190 is all that can be safely borne. In all these cases, if the strain and worry of life can be modified, so much the better. This is especially true in the case of a

strenuous business man of about sixty ; but such a man cannot happily change from a life of intense activity to one of utter idleness. He should occupy himself with milder pursuits, outdoors if possible. Happy is such a man if he has a hobby, and so much the better for humanity if the hobby be a useful or beneficent one.

The other phase of the subject under consideration to which I desire to call your attention is the sexual perversions of middle life and old age. Perhaps a better name in most instances would be sexual irregularities, as only a small per cent of the cases I have in mind are actually perversions in the strict sense. To illustrate: A man lives in happiness and contentment with his wife, faithful to her and to his vows. The man I am describing is a very decent kind of man, a really upright man, who is either not greatly tempted to immorality, under his circumstances, or if so tempted is able to resist and overcome the temptation. There are many men of just that type who, after reaching fifty-five or sixty years of age, commit their first act of sexual immorality. Why does this happen? There are several reasons. In the first place, most men of that age retain their sexual desires to a large extent and their sexual power also, but to a less extent. On the other hand, their wives have either lost all sexual desire, or retain it in diminished degree. The result is that the man who has been previously satisfied in his sexual relation longs for some one younger and more responsive. The prostitute does not tempt him as a rule, but he is liable to succumb if he meets a widow or unmarried woman, or an unhappy married woman, of strong passion and weak morals. And the main reason he succumbs is that all his married life he has not been selfcontrolled. He has been faithful to his wife, but not to himself. The sexual element has played too dominant a part in his life and he finds himself unable to resist doing what heretofore he believed he never could do.

Another type of man is he who never has been moral, married or single, who never has known self-control in any degree. Both these types are liable to develop real perversions still later in life,

such as finding sexual gratification in handling boys and being handled by them. I have come across several such cases within a few years; one was a school teacher and two others were clergymen,—all three men of more than usual ability in their professions.

I have brought this unusual and unpleasant subject before you in this address and in the Bureau of Psychotherapy mainly for one purpose. The accomplishment of that purpose makes it necessary for us to go to the other extreme of life,—childhood. It is hardly necessary to affirm the tremendous influence of the first nine years of life upon the whole of the subsequent life. During these years the senses are alert as never afterwards and the registering apparatus is plastic, sensitive and retentive. Impressions of all kinds come rushing in and are registered. Many are apparently forgotten, but the subconsciousness does not forget and there they are retained. Some impressions are deeper, more powerful than others, and their effects upon the individual later are correspondingly more powerful and it may be, perhaps, irresistible. Among the most powerful of such impressions are the sexual. It is therefore of supreme importance that they should be correct ones, clean ones, true ones. Therefore, children should not be deceived when they begin to inquire or become curious about sexual matters. Such things should not be made mysteries. And, especially, children should not be told that such subjects are improper and must not be talked about. Children should be told the truth according to their age and ability to comprehend. The truth can be told naturally, purely, without stimulating curiosity, but rather satisfying it and removing all mystery. If not told the truth in its purity and sacredness by the proper persons, they will learn falsehood and vulgarity from improper persons. And harmful impressions will be indelibly registered upon the subconscious mind, which may afterwards do them incalculable injury. I am confident that many of the cases of sexual irregularity and perversion in later life (as in every stage for that matter) are due to exceedingly powerful sexual impressions received some time during the first nine years. This

is my purpose in bringing this subject before you, to insist that children must be started right in these early years to prevent disaster in the later ones. Then will selfcontrol be possible in manhood and maturity, and a sane, serene old age crown a life of high endeavor, even though one's arteries become hard. For after all it does not matter so much if our arteries do get hard, so long as we keep our hearts tender.—*The Journal of the American Institute of Homœopathy*, July, 1914.

SHOCK.

BURTON J. SANFORD, M. D.,

In choosing this subject for consideration this evening I have been actuated by more than a single purpose. In the first place, it is extremely difficult to find a subject to discuss which will appeal to and interest men who are engaged in the surgical specialties and those that are engaged in general practice or in special lines not surgical. Also, I wish to call to the attention of doctors in general that the treatment of shock is not limited to surgeons. In other words, that shock is not entirely surgical, not due to trauma alone. Inasmuch as this is so, its etiology should be better understood and its treatment familiar to the physician as well as the surgeon. The bearing which shock has on many nonsurgical conditions will be brought out as this paper progresses.

To begin with, what is shock in a literal sense of the word? It may be said to be a condition of reflex depression of vital functions which may occur after severe injuries and operations, but also may result apparently from mental excitement induced by even comparatively slight injury sometimes occurring without the slightest traumatism.

In describing a case of acute shock I shall be portraying something familiar to most of those present. Usually, the bodily temperature is lowered, especially in operative cases, ranging from the normal to 97° F. or even lower; the perspiration becomes cold; the patient clammy. Pallor is marked especially after whatever ether flush there may have been has vanished. The pulse, departing from its normal 70 to 80 beats a minute, mounts to from 120 to 160, and its tension diminishes rapidly until it becomes very easily compressible, so much so that to the untrained or the excited, no pulse can be found. Auscultation of the heart shows the first and second sounds diminished, and like the tick of a watch in character. The patient's respiration is mostly thoracic and shallow, more rapid than usual. The pupils are dilated. Nausea, hiccough and vomiting frequently occur, adding to the distress and increasing restlessness of the patient; also incontinence of urine and feces due to the utter muscular relaxation of the patient.

Upon first thought the doctor will say, "Why, that's a description of a case of surgical shock." To be sure it is a description of surgical shock, but are these symptoms confined to surgical shock or the results of traumatism? By no means. Fear will produce every one of these symptoms in as marked degree as trauma. Those who have had the chance to see fear manifested to a marked degree in a human being will, have to

admit that it can and does produce the same objective symptoms as surgical shock. Great physical exertion as the result of endurance tests results in the same group of symptoms. Also, but to a less degree, have you noted the characteristic symptoms of Graves' disease? Are not a good many of them common to both shock and to thyroid toxemia? If they are not alike in many respects, why should an advanced case of Graves' disease bear even the simplest of surgical procedures with such difficulty? Obviously they have many features in common, so many that when one condition is superimposed upon the other the already overtaxed human organism passes beyond the limit of endurance and death ensues.

After having thus briefly called to your attention, (1) that shock is not alone due to bodily traumatism either during the progress of an operation or as the result of severe bodily injury by accidental trauma, and (2) that it has a great many features in common with hyperthyroidism, a condition in which there is grave disturbance of metabolism, I pass on to the discussion of the various theories of shock production, each of which has numerous advocates. In this I have drawn largely from the experimental work of Crile, Henderson and Porter, all of whom have been laboring for years to establish the etiology of shock.

One theory is that shock is due primarily to cardiac exhaustion; another, that shock is due to reflex inhibition of the activity of the centers of the cord. A hypothesis which has received a great deal of acceptance among surgeons for a number of years is that shock is due to vasomotor exhaustions. This theory is as follows: As the result of the cumulative effect of excessive or unusual stimulation of afferent nerves, the vasomotor center becomes depressed and, finally, completely exhausted; as a consequence of this exhaustion, there occurs a paralysis and dilatation of the peripheral vascular system with the accumulation of blood in the venous trunks. The output of the heart diminishes, and the circulation gradually fails. Seeley and Lyon have definitely proved, however, that the peripheral vascular system is *not* paralyzed and that *no inhibition* of the vascular center exists, even in profound shock.

Following the disproving of this theory of shock Prof. Henderson of Yale advanced the theory of apnea as the causal factor in shock. This theory stated briefly is as follows:

"Voluntarily forced respiration in man produces symptoms of shock. Emotion, pain, ether excitement, irritation of sensory nerves without conscious suffering, and other conditions known to produce shock, involve excessive res-

piration or hyperpnea. The result of this over-ventilation of the lungs is a fall in the proportion of CO_2 in the blood (acapnea). Another source of carbon dioxide loss is the evaporation of CO_2 from exposed viscera during abdominal operations. The primary result of this withdrawal of the natural stimulus of the respiratory center is a cessation of respiration (respiratory failure), which if sufficiently prolonged (about 8 minutes) will cause death by oxygen starvation of the heart.

"An important secondary effect of acapnea is an increase in the rapidity of the cardiac contractions. This increase of rate is at the expense of diastole, therefore lessening the time necessary for the auricles to fill. The output of the heart diminishing thus produces a fall in blood pressure. Decrease in venous blood pressure then occurs and the blood stagnates in the veins. According to Henderson, therefore, the failure of circulation in shock is a venous stasis, the underlying cause being a diminution of the CO_2 content to the blood. The fall in venous pressure decreasing the venous stream to the heart, and thus an increased pulse rate".

Until a short time ago this theory had many supporters, as had the theory of vasomotor exhaustion as a causal agent of shock. So, before going on to discuss one of the latest and what seems to me the correct theory of shock, I shall explain in brief how Dr. Crile has disproved this theory. First, he wished to prove that shock could be produced without the development of acapnea so that, necessarily, the decrease in CO_2 need play no part in the shock production. The method he used was unique, clever, and clearly demonstrated his point. The circulations of two dogs were crossed, that is, their vessels were so anastomosed as to give the two animals the same circulation and its characteristics, that is, the same blood pressure and same CO_2 content in their blood. Their blood pressure was then rendered static by over transfusion so as to maintain as even a blood pressure as possible, thus eliminating cerebral anemia as a factor in whatever shock might occur. One of these dogs was then subjected to severe trauma over a considerable period. This dog developed very severe shock, while the other dog showed little or no evidence of shock despite the fact that the two animals were having a common circulation. The conclusion drawn from this experiment was that acapnea was not a necessary concomitant of shock. Therefore circulatory and respiratory failure in shock could not be due to a CO_2 diminution in the blood.

Yet another experiment was done to eliminate acapnea as causal factor in shock. In this experiment a "spinal" dog was used. A "spinal" dog is one whose spinal cord, has been

destroyed at the level of the first dorsal vertebra. This cuts off afferent impulses from the lower extremities and abdomen. The dog is well nourished for some time, regaining its health again, with the exception of having all sensory impulses cut off from reaching the brain. This dog's extremities were subjected to severe trauma, the abdomen was opened and the viscera exposed and subjected to trauma such as would produce profound shock and death in a normal animal. But the dog showed little or no signs of shock. Certainly, were shock due to CO_2 evaporation from intestines, this dog would have suffered severely. Obviously, then, diminution of CO_2 was not the cause of shock. If not, then what part did the severed spinal cord play in the prevention of shock? Did the elimination of afferent impulses from the traumatized area have any effect in eliminating shock? And if that were so, how did the reception of these impulses from the traumatized area bring about such end results?

With some of these questions in his mind, probably, Dr. Crile and his associates set out to find, if possible, some definite result of these sensory impulses, if it were really true that they played an active part in shock production. Clearly, the first place to look for the results of this sensory bombardment was the brain cortex, for there were received all these impulses. Also, they desired to determine, in whatever way possible, whether there was any chemical or visible histologic change in the cortical cells as a result of excessive activity due to such excess stimulation as might come from severe trauma.

The work of Crile and his associates has covered a period of three years and histologic studies have been made of 312 individual human and animal brains. Their studies include acute and chronic emotional excitation of rabbits; dogs traumatized under inhalation of anesthesia; dogs killed after fighting; normal foxes and those pursued by dogs and killed; dogs suffering from pyogenic infection; dogs poisoned by strychnine, alcohol, ether, curari, iodoform, thyroid extract and adrenalin; acute traumatism of "spinal" dogs and dogs with crossed circulation; trauma in dogs that have been over-transfused to exclude cerebral anemia as a factor; dogs suffering from acute hemorrhage, etc. The human brains examined include those of a workman killed instantly by falling, a young man killed by stabbing, a man shot through the heart, a new born babe, an old man, a case of Graves' disease, of pneumonia, of typhoid fever, of delirium tremens, of cancer cachexia with infection of pyogenic infection and of eclampsia.

The studies were made with reference to the following points: the size of the cells, the amount and physical condition

of the component parts of the cells, the number of cells in the field and the intervening granular cells.

Bohm and Davidoff in speaking of the histology of cortical cells say: "After treatment by special methods, the protoplasm of the nerve cells shows granules or groups of granules which show affinity to certain stains, consequently, known as chromatophile granules (nissl substance); these are densely grouped around the nucleus so that the cell shows an inner darker and an outer lighter portion. These chromatophile granules, also spoken of as tigroid granules or as tigroid substances, as a rule are not arranged in concentric layers but in groups, giving the protoplasm a mottled appearance.

The brain cells of acutely infected dogs in all cases showed a decrease in the nissl substance of the cells. Dogs poisoned with strychnin showed an increase in the nissl substance of the cell, but if kept alive for several hours, showed a decrease. Animals given small and large doses of alcohol showed increase in nissl substance but after lethal doses showed diminished nissl substance and morphologic deterioration. In man, in every case where the brain was examined and the individual had died of disease whether from cancer, Graves' disease, or what not, the brain cells showed marked decrease in nissl substance and marked morphologic alteration in the cells. But in the brains of healthy individuals killed suddenly, the brain cells and nissl substance approached the normal. In animals traumatized under inhalation of anesthesia, the condition of the brain cells varied. The cells of animals subjected to momentary trauma showed a slight increase in nissl substance while those subjected to severer or more prolonged trauma showed a morphologic change and decrease in nissl substance in proportion to the depth of shock. In the animals traumatized under inhalation anesthesia, in which direct transfusion of blood was resorted to, to eliminate cerebral anemia as a factor, there occurred diminution of nissl substance in the brain cells. No amount of trauma in the paralyzed areas of dogs whose spinal cord had been separated was sufficient to produce any change in the brain cells. In the pair of dogs whose circulations were crossed and whose blood pressures were maintained by transfusion, the brain of the traumatized animal showed the typical changes while the other brain showed no changes. Direct trauma of one hemisphere produced no resulting change in the other.

In animals subjected to acute fear, if killed immediately, there appeared an increase in the nissl substance in the cortical cells; if killed after some hours, there appeared a marked deterioration of the cells. In chronic fear, there appeared a morphologic change and deterioration, whether killed immedi-

ately after exposure or 12 hours afterward. The cortical cells of foxes killed after a severe and prolonged chase as well as those of dogs killed after fighting showed deterioration. No cortical cells of dogs under sexual excitation showed increased nissl substance.

Crile sums up these findings as follows :

"Whether as a result of injury, of disease, of drugs or of emotional stimulation, the physical state of the brain cells corresponded closely with the state of vitality; not only with the state of vitality as a general term, but also the state of such functions as cerebration, digestion, muscular power, respiration, circulation, disturbance of metabolism, of excretion, in short most of the bodily functions. Then, too, in both animals and in man, the physical condition of the brain cells apparently was a good index of the extent of surgical operation that probably could have been endured.....The foregoing tends to show that there are in the brain cells the labile compounds capable on adequate stimulus of converting their potential energy into kinetic. This substance is selected in part or entirely by the nissl stain and its quantitative variation corresponds to vital power. The principal changes in the composition of the blood, the circulatory, respiratory and functioning organs, whether increased or suspended in physical exertion, as a result of physical injury and emotional stimulation, are but a part of the adaptive reactions through the influence of the excited brain. These phenomena (altered respiration, blood pressure, etc.) seem to us to be secondary, while the changes in the brain are the primary lesion in shock."

Worry is only intermittent fear which in lower animals, acting as a sensory stimulus of great magnitude, would result in intense and prolonged muscular activity. But in man with his more highly developed brain, such stimulation although received does not result in visible motor activity. Man with his developed reasoning, with his associative ability, inhibits voluntary motor activity. But what of all the host of impulses that are sent out from the cerebral center to the centers of involuntary motor activity and indirectly to all the functioning organs of the body? Those impulses, of necessity, cannot be inhibited. What are the results? Loss of strength and appetite, indigestion, rise in blood pressure and increased pulse rate, glycosuria, increased perspiration, cardiovascular disease, neurasthenia and Graves' disease. These may be the result of frequently repeated emotional stimuli and representative of a condition which may be termed chronic shock. There is no one present who has not been subjected to severe emotional disturbance, who has not experienced some of the above men-

tioned phenomena and the subsequent sense of complete exhaustion, physical and mental. Given the continued or oft-repeated application over a considerable period of time of the stimuli which produce such results and the foundations have been laid for arteriosclerosis, gastric and cardiac neuroses, Graves' disease, neurasthenia, parietic dementia, and other neuropathic conditions.

Let us now consider acute shock especially as regards operative procedures. Those familiar with surgical work know that shock may follow any operation, however trivial, but that, in general, it varies according (1) to the locality involved, (2) to the traumatism, and (3) to the time during which trauma (i. e. operative work) is applied. A fourth factor may be added which in man is not inconsiderable and that is the emotional element.

One may raise the question,—Does not the anesthetic prevent shock by producing unconsciousness? The question has to be answered in the negative. Although unconsciousness is produced, the cortical cells of the cerebrum are as capable as ever of receiving sensory stimuli and responding through the cardiac and respiratory centers of the medulla. Who is there that is not familiar with the variation in respiration consequent to manipulation of the upper abdominal viscera, even in deeply anesthetized patients? Who has not witnessed the rigidity of the recti and their contraction when touched by the knife even though the patient may be unconscious? They represent the effort of the individual to escape injury and come as a result of motor response to sensory stimulation which has been applied to the portion of the brain supposed to be cut off by the anesthetic. Truly, then, the anesthetic cannot have done anything but render the patient unconscious, without having cut off the cerebrum from the reception of sensory impulses. Some one may question this statement, may wish to know how that fact is known. The matter has been proved by subjecting dogs to anesthesia and also anesthesia plus trauma with the result that the cortical cells of the anesthetized animals showed no alteration, whereas the cells of the traumatized animals showed the characteristic changes.

The cortical cells of the brain, then, being "awake," in spite of the unconsciousness of the individual under anesthesia, the reason for shock becomes apparent. If sufficient traumatism occurs, in a region well supplied with sensory nerves, if it is repeated for a greater or less period of time the brain cells will be deprived eventually of all their available potential nervous energy, and exhaustion will result just as exhaustion follows too prolonged exertion. As has been demonstrated

by Dr. Crile in his study of brain cells under varied conditions, the morphologic changes of the brain cells due to ordinary muscular exertion and injury under anesthesia are identical. Traumatic shock, pure fear, and muscular exertion all show the same changes and also all show recovery of normal state after a certain length of time. If, then, all these conditions show the same cerebral changes, the cellular deterioration must result from the same cause, an excessive discharge of nervous energy stored within the cell. This being so, emotional disturbance as well as trauma will act as a factor in exhausting the intrinsic nervous energy of the brain cells and both aid in inducing and increasing shock.

I may be able to emphasize this factor in the production of shock by a few briefly described cases of shock in the gynecological clinic of this hospital.

Case I. Mrs. S., a middle aged woman, came into clinic suffering from severe uterine disturbance, metrorrhagia, etc. A hysterectomy was advised and consented to by the patient. She had suffered a great deal of trouble at home, her husband maltreating her, so that she was in a state of continual anxiety, becoming at times very despondent. Physically, she was in condition to stand the operation. While taking the anesthetic, the patient told the anesthetist that she had much trouble and had caused so much trouble that she hoped and prayed never to regain consciousness. Ether and oxygen were given for the operation. A supravaginal hysterectomy was performed with little or no hemorrhage and the abdomen quickly closed, the whole operation consuming about 30 minutes. The patient was taken to her room in good condition only to develop very severe shock. It was only by the most careful treatment over a period of about 40 hours that she gradually recovered her equilibrium and thereafter went through an uneventful convalescence.

Case II. Woman, aged 36, came into the clinic suffering from a beginning squamous-cell carcinoma of the posterior lip of the cervix. She was told the nature of her trouble and that a panhysterectomy would have to be performed. She readily assented. Patient admitted dreading the operation and said that she was horribly afraid. Everything was said and done to reassure her. Coming to us as she did without notice, she had to wait 4 or 5 days before operation. A hospital ward, of all places in the world, is the least calculated to instill confidence in a patient who is frightened and awaiting operation. The atmosphere of the place, the surgical dressings, the trend of conversation of the convalescents are not calculated to render

a nervous woman easy, in spite of all the reassurance of doctors and nurses. This patient came to operation with terror in her heart. A panhysterectomy was done under ether and oxygen, and the patient returned to her room in fine shape. Later in the evening, as the patient reacted more fully from the anesthetic, her pulse began to become rapid and soon she was in a condition of grave shock. The condition developed so suddenly out of a clear sky, that I considered the possibility of hemorrhage in the beginning, but soon could exclude that because she didn't have the extreme pallor, spasmodic gasping and other signs of hemorrhage. Patient was given quarts of saline by hypodermoclysis, brandy, strophanthin and other circulatory stimulants, and morphin to relieve restlessness and pain. All our efforts however proved of no avail and the patient died about 36 hours after operation.

These cases suffice to illustrate somewhat the possibility of shock developing in patients in fairly good health, not weakened by disease, not subjected to prolonged operative work or hemorrhage; patients in whom the emotional element has assumed great proportion, who are suffering from chronic shock, whose cortical cells are exhausted of all their available nervous energy. There are no surgeons with good sense who would consider an individual exhausted by prolonged physical exertion a good surgical risk. Are these patients, then, who are overcome by their fears, in whom the element of fear is not destroyed and prevented from recurring by judicious treatment, to be subjected to surgical treatment carelessly? Are they good surgical risks? I should say that very decidedly they are not.

What may we do, then, to eliminate this element of fear in patients awaiting operation, or at least to minimize it as much as possible? In the first place, reassure the patient, get his or her confidence, be cheerful and as optimistic as to the ultimate outcome as is warranted by the nature of the case. It is unfortunate for the mental equilibrium that they should be placed in wards with convalescents. As I have said before, the whole atmosphere and tone of the place is depressing to the new arrival. Convalescents, in general, derive a dreary sort of pleasure in telling their ward associates all of their troubles and discomforts, how they suffered from nausea and gas pains, how thirsty they were, what terrible pains they had through their incisions, etc., *ad nauseam*. I am now speaking of the average patient. To the newcomer these statements are secretly disturbing and produce much worrying which although not apparent, will at times crop out. Numerous times I have been stopped by patients about to be operated; and have

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been questioned about matters, greatly disturbing to them, which have been talked about, cussed and discussed by morbid convalescents.

As the day of operation approaches, the patient is liable to suffer from sleeplessness. I believe it is a wise thing to give the patient a good night's rest prior to operation. If the patient cannot sleep and begins to manifest nervousness, a hypnotic should be administered. Chloral hydrate administered in brandy and glycerin, with saccharin, serves the purpose very well; the brandy and glycerin masking the chloral and removing its irritant properties. When administered by mouth the patient will usually fall asleep in from 15 to 30 minutes and sleep the greater part if not all night. If the sleeplessness is due to nervousness and not to pain, the above will be very effective. With the presence of pain an analgesic will also have to be administered.

When the day of operation arrives, the patient will begin to feel nervous in earnest, especially as the time for operation approaches. Only one or two remedies fulfill the test of efficiency here. They must be capable of hypodermic administration and capable of relieving mental anxiety. These are morphin and hyoscin or morphin and atropin. Either of these combinations administered together an hour before operation relieve, very markedly, the immediate preoperative terror and render the administration of the anesthetic easier by virtue of the hypnotic effect and the diminution of mucous secretion.

Now briefly as regards shock during operation. An important factor is speed. Limiting the period of tissue injury as much as possible aids in limiting shock. Making the operation as bloodless as possible is another factor to be remembered. Any needless manipulation of abdominal viscera is to be condemned as conducive to shock development. In pelvic work, the walling off of the intestines by abdominal towels is extremely advisable before beginning any operative procedure. In the first place, the viscera are protected from chilling, from unnecessary manipulation, from injury and any infective material freed in the pelvis as a result of the operative work. There is a proverb that a stitch in time saves nine; one or two abdominal towels judiciously applied at the beginning of an operation will usually save a good many minutes, also unnecessary hemorrhage and manipulation. Blunt dissection produces more shock than a sharp dissection, just as a crushing injury produces more shock than an incision. Traction or excessive manipulation of large nerves or vessels should be remembered as conducive to shock.

After the conclusion of the operation, everything is done to conserve the energy of the patient. The patient is wrapped with blankets and returned to the room as quickly as possible and put in a warm bed well supplied with blankets. The bodily temperature falls during the operation, so that in spite of warm water bottles and blankets the temperature is down to 96° or 97° F. The treatment instituted should be the same as though it were a case of extreme physical exhaustion, with the temperature subnormal; the first thought is to return it to normal limits. The patient is surrounded by hot water bottles and covered with blankets. I have found that a very efficient aid in producing a reactionary rise in temperature, is the hypodermic administration of strychnia and brandy, repeating the brandy alone every hour thereafter until the temperature is normal. One or two doses almost invariably is all that is necessary. In my opinion, strychnia is of value administered in this fashion in case of shock. Its effect on the cardiac and respiratory centers is that of irritation, a temporary whip to maintain the respiratory movement and cardiac contraction. The rate of the pulse can be lessened and blood pressure raised by other means. The rapid absorption of the alcohol in the brandy results in an increased oxidation with increased temperature.

Another means of preventing or relieving shock is the use of a stimulating enema immediately upon the patient's arrival in his room. The enema we use is composed of digitalis, black coffee, brandy and water; the foot of bed being elevated until the enema is absorbed.

As is well known, blood pressure falls and the cardiac rate increases in shock. The best means in relieving this feature of shock is the administration of saline solution. This can be given by rectum, into a vein, under the breasts, or in the axilla. Hypodermoclysis seems to me the most efficient as well as the most practical and easy way to administer saline. If placed in loose tissue, great quantities are quickly taken up with very rapid effect usually in decreasing the cardiac rate and increasing the blood pressure. If pituitrin is added to the saline, the effect on the blood pressure is even more marked. If the saline which has been given is absorbed rapidly but without very much effect on the rate of pulse, don't hesitate to repeat the dose. But give it more slowly. At this time it is usually best to give the patient something to slow the heart rate, to lengthen its diastole. Digitalis is the drug above all others in ability to strengthen its contraction and decrease its rate. As it is impossible to give it by mouth in these cases and the digitalin on the market is so uncertain in its action, it will

be advisable to give the tincture by rectum or use one of the newer hypodermic preparations of digitalis (digalon or digipuratum) hypodermically. These are very rapid in their action, in combination with the administration of plenty of saline solution, slowing the pulse and increasing the blood pressure. If these preparations of digitalis are not available, spartein sulphate in 2 grain doses hypodermically will be found nearly if not quite as efficient, with the additional virtue that it produces more diuresis.

As the patient reacts, she will become restless usually directly in proportion to the degree of shock. There is absolutely nothing to be gained by allowing the patient to wear herself out, to use up her energy both in moving around and in worrying. If the nurse, by her ministrations, fails to relieve the restlessness, an opiate should be given at once. The combination of morphin and hyoscin is here ideal in that it both relieves the pain and anxiety and also produces sleep. I am aware of the fact that many surgeons do not believe in the use of morphin alone or in combination, following abdominal operations where there is a possibility of peritonitis. The general consensus of opinion is that opiates should not be used until the bowels have been moved in these cases. I find that the hypodermic use of morphin has never given me difficulty even if there is considerable tympanites. Those cases of shock, with abdominal distension and increasing restlessness, are very apt to be nauseated and vomit frequently. A quarter grain of morphin or H. M. C. tablet will soon relieve the restlessness and pain, and stop the vomiting. In about one-half hour I administer a grain of mercurius dulcis by mouth, and in an hour four drams of epsom salts. The patient will retain them and in the vast majority of cases, within several hours, have one or two good liquid bowel movements with the relief of the tympanites. This is especially valuable in pelvic cases where the sigmoid has been injured in breaking up adhesions, so that one is afraid to use gas enema.

As has been said before, shock is an exhaustion, due to excess of stimulation of cerebral cells both sensory and emotional. Wherefore, then, the logic of allowing a patient already shocked to add to her shock by an additional expenditure of energy? One who has noted the slowing and increase in volume of a previously rapid and feeble pulse, the diminishing restlessness, the deepened, regular, and less rapid respiration, as the patient begins to get the effect of the morphin and hyoscin, cannot but feel that his battle is already partly won.

During this period of shock, this period of utter exhaustion of the patient, energy must be supplied to the patient in a concentrated and quickly assimilated form. If the patient can retain liquids in her stomach, hot bouillon and hot brandy sling are invaluable and should be repeated at frequent intervals. As improvement occurs, other fluids, orange albumin, egg-nogs may be instituted gradually, no solid food being given until the bowels have been moved.

In conclusion, I wish to call your attention to the work of Dr. Crile on Shock, from which I have drawn freely for this paper. His discussion of racial phylogeny and its bearing on the development of shock is of a masterly nature and, I believe will bear the test of time.—*The Journal of the American Institute of Homœopathy*, July, 1914.

EDITOR'S NOTES.

Heliotherapy in Surgical Tuberculosis.

Though the value of heliotherapy in surgical tuberculosis was pointed out many years ago by the French surgeons, Bonnet, Ollier, and Pouchet it has become a recognised method on the Continent only in recent years. In this country a beginning has scarcely been made. In the special tuberculosis number of the *Interstate Medical Journal* Dr. G. Hinsdale has described the treatment on the French coast and in the Swiss Alps. As far back as 1857 Madame Duhamel, who cared for scrofulous children at Berck-sur-Mer, had them wheeled twice a day to the beach, and after bathing them and washing their sores she refused to clothe them completely, evidently with the idea that the unobstructed exposure to sun and air would hasten their recovery. Now at this great French resort for the tuberculous free access of sunlight is deemed the essential feature of the treatment. The long galleries or balconies at the Marine Hospital are constructed for the purpose of completely exposing the body to sunlight. Here in summer the patients unclothed spend the whole time from 6 A.M. to 5 or 6 P.M. Operation wounds are exposed from the fifteenth day, but operations are exceptional and performed only as a last resort. In Switzerland the greatest impulse to heliotherapy has been given by Rollier, whose remarkable results at Leysin have attracted much attention. He carries heliotherapy a stage further than his predecessors, who exposed only diseased parts to the sun. He exposes the whole body. This he accomplishes gradually. According to the gravity of the case he allows from three to ten days after arrival in the mountains to elapse before beginning exposure. No matter what the seat of the disease—hip, spine, or cervical glands—he begins by exposing the feet to the sun for five minutes at intervals of an hour five times on the first day; on the second day similar exposures of the legs are given; on the third day the thighs are also exposed; on the fourth day the abdomen; and on the fifth day the chest, when the precaution is taken of covering the heart with a damp cloth. If the condition of the patient permits the back is also exposed to the

sun. Finally, on the sixth or seventh day the head and neck are exposed. As the skin becomes pigmented the duration of the exposure is increased. Hand in hand with the pigmentation the tuberculosis is cured. Rollier has succeeded in training his patients, both children and adults, so that they live almost nude in the open air of the Alps quite comfortably. Sunlight has considerably more actinic power in the mountains than at the sea level, but heliotherapy can be successfully practised at the latter.—The *Lancet*, July 11, 1914.

Plague Clouds in the West.

At the present time plague clouds are appearing on the horizon and threatening to approach the United States. Although some of these clouds may as yet seem small and at a considerable distance away, they cannot be altogether disregarded. We have already on many occasions called attention in these columns to the danger arising from the protracted and extensive epizootic of plague among the hordes of ground squirrels which inhabit a large part of the State of California. American as well as other epidemiologists have long recognised the risks of a human epidemic originating at any time by extension of infection from ground squirrels to local rats, which often share the same burrows, and from rats through the agency of fleas to man. From time to time sporadic human cases of plague are reported in the affected districts of California, and these instances are invariably associated with infected ground squirrels; the last reported case of the kind occurred this year in May, and was fully confirmed by bacteriological examination. To the north of California, and separated from it by Oregon, is the State of Washington, abutting on the Pacific. On the coast of this State is the rising port of Seattle, on Puget Sound not very far from the Canadian frontier, having important connexions with the interior by means of the Northern Pacific and other railways, and having also a considerable coasting as

well as trans-Pacific trade. At the end of last year plague-infected rats were discovered along the water front of this city, and notwithstanding the strenuous local efforts to suppress the epizootic, other infected rodents have been found since then, week by week, up to the present time. Only one suspected fatal case in man has so far occurred, but so long as the rat population of Seattle remains infected so long will there be danger of the disease extending to man. A few days ago information reached us that on June 28th two persons in New Orleans had been attacked by plague; since then three more attacks have occurred with two deaths. Whether the two first cases were imported or were due to existing infection smouldering unrecognised in that city it is not possible as yet to say. Unless the sanitary condition of New Orleans has been greatly improved since 1912 it is hardly in a satisfactory state to resist the invasion of plague. The disease has also been occurring, in a dropping fire of cases, in the West Indian island of Cuba, which is under the protection of the United States, and with which it carries on a considerable commerce. Up to the middle of June, the date of the last reports, some 22 cases had been notified in Havana, the capital of Cuba and its chief seaport; the infection has been carried thence to the town of Artemisa, 35 miles south-west of Havana, and recently an epizootic of plague in rats had been discovered in the town of Jaruco, situated 26 miles south-east of the capital. It is possible that the two first cases in New Orleans may have been associated with the plague infection now existing in Cuba, as there is much trade between these ports. Lastly, it may be mentioned, in view of the increasing connexions now being established between the United States and the Isthmus of Panama, that plague, said to be of the pneumonic type, has been for some time and is still manifesting itself in Columbia, of which State the Panama Canal zone at one time formed part before its transfer to the United States. The correctness of the diagnosis of plague in the Columbia cases has been denied, but it has to be remembered that many of the South American Republics make a practice of denying point blank the existence of plague

and yellow fever within their borders to escape the inconveniences of quarantine. On the other hand, from a trustworthy source comes the definite statement that the diagnosis of plague has been confirmed by bacteriological examination both of the sputum and the blood of several patients. It is also asserted that "cases of pneumonia of an infectious kind," nearly all of them fatal, have been occurring along the Colombian coast of the Caribbean Sea for more than a year, their true character and their relationship to plague not having been recognised until now. In the face of these facts it can scarcely be disputed that there are plague clouds threatening the United States, and it would appear that this has been officially recognised. Several articles on plague have lately been published in our American contemporary, *Public Health Reports*, the official organ of the United States Public Health Service, and in one of them the danger arising from the infected ground squirrels in California and the plague-stricken rats at Seattle is freely admitted, as also the advisability of giving exact information concerning the disease as far as practicable to all persons who may at very short notice be called upon to take their part in a comprehensive anti-plague campaign. For this purpose one of the articles, under the title of "Fleas and Plague," gives an account of the important series of experiments carried out by Bacot and Martin, of the Lister Institute, under the direction of the Commission for the Investigation of plague in India, the results of which have added so materially to our knowledge of the mechanism of the transmission of plague by the rat-flea and to which we have already directed attention in our issue of April 4th, 1914, p. 975. Another of the articles in *Public Health Reports* deals with some of the difficulties met with in the diagnosis of plague, mention being specially made of cases in which plague has been mistaken for filariasis; and an instance is quoted where a patient really suffering from filarial lymphangitis was thought to have genuine bubonic plague. The attention of practitioners in regions such as the West Indies, where filariasis occurs, was specially called to these cases. The Public Health Service of the United States has in its ranks

a large number of highly trained and competent medical officers many of whom possess special experience of plague gained in various parts of the world. The service of these experts would at once be available in the event of the disease showing any tendency to extend beyond its present limits. Against this, however, is the assertion, made by those who apparently know, that some of the towns and districts likely to be invaded, if the infection spreads, are hardly in a satisfactory sanitary condition such as would enable them to repel successfully the insidious onset of plague. Perhaps the present season of the year is not altogether favourable for the immediate spread of plague in North America, but there is always the risk that the infection may gain a footing in one or more places where, under favouring conditions, later on it may break out with renewed virulence and spread to more populous districts in the interior.—The *Lancet*, July 11, 1914.

Gleanings from Contemporary Literature.

RADIUM.

BY RUDOLPH JACOBY, M.D.,

In introducing the subject of my paper I shall devote some time to a theoretical and historical sketch of the facts which lead up to the important discovery of this new and wonderful element, radium.

The past few years have been marked by a very rapid increase of the knowledge of a most important but comparatively little known subject,—the connection between electricity and matter. This subject has been very fruitful in surprises to the investigators, both from the remarkable nature of the phenomena exhibited and from the laws controlling them. The study of the radio-active substances and of the discharge of electricity through gases has supplied very strong evidence in support of the fundamental ideas of the existing atomic theory. It has also indicated that the atom itself is not the smallest unit of matter, but is a complicated structure made up of a number of smaller bodies.

The experiments of Leonard on the cathode rays and Roentgen's discovery of the X-rays gave the study a great impetus. Examination of the conductivity imparted to a gas by the X-rays leads to a clear view of the mechanism of the transport of electricity through gases by means of charged ions. This ionization theory of gases affords a satisfactory explanation not only of the passage of electricity through flames and vapors, but also of the complicated phenomena observed when a discharge of electricity is passed through a vacuum tube. Further study of the cathode rays showed that they consisted of a stream of charged particles, projected with great velocity and possessed an apparent mass, small compared with that of the hydrogen atom.

An examination of natural substances, in order to see if they gave out dark radiations similar to the X-rays led to the discovery of the radio-active bodies which possess the property of spontaneously emitting radiations, invisible to the eye, but readily detected by the action on photographic plates and by their power to discharge electrified bodies.

To explain this phenomenon, Rutherford and Soddy in 1903 advanced the theory that the atoms of radio-active elements suffered

spontaneous disintegration, and gave rise to a series of radio-active substances which differ in chemical properties from the parent elements, the continuous emission of energy from the active bodies being derived from the internal energy inherent in the atom itself. (This does not in any way contradict the law of the conservation of energy). The enormous store of latent energy is resident in the atoms themselves.

On this theory, there is a veritable transformation of matter in the radio-active bodies. The process of disintegration was initially investigated by means of the property possessed by the radio-active bodies of giving out specific types of radiation. In weak radio-active substances like uranium and thorium, the process of disintegration is very slow, while with radium it is sufficiently rapid to obtain evidence of transformation with very small quantities of the material weighing only a fraction of a grain; i.e., the isolation of a most remarkable gas, known as "radium emanation." Further proof of the continuous production from radium and other radio-active bodies is the rare gas helium which is derived from the emanations in consequence of changes of some kind occurring in it.

The term "Radio-active" is generally applied to a class of substance, such as uranium, thorium, and their compounds, which possess the property of "spontaneously" emitting radiations capable of passing through plates of metal and other substances opaque to ordinary light. The characteristic property of these radiations, besides their penetrating power, is their action on a photographic plate, and their power of discharging electrified bodies. In addition, a strongly radio-active body like radium is able to cause marked phosphorescence and fluorescence on substances placed near it. In the aforementioned respects the radiation possesses properties analogous to the Roentgen rays but this resemblance is only superficial.

Roentgen's discovery of the X-rays in 1895 created a most intense interest throughout the scientific world. This influenced several physicists to try whether ordinary bodies emitted a similar radiation, which was able to pass through matter opaque to ordinary light. Working along these lines, Professor Henri Becquerel exposed a number of phosphorescent substances enveloped in blank paper under a photographic plate. His results were entirely negative. It then occurred to him to try experiments with salts of uranium, the phosphorescence of which had been previously investigated by him. He exposed crystals of the double sulphate of uranium and potassium

to light, then enveloped them with two layers of black paper, and placed below the photographic plate with a small plate of silver between. After an exposure of several hours and development, a distinct photographic effect was observed. The experiment was at once repeated with a plate of glass 0.1 mm. thick between the uranium salt and the photographic plate in order to cut off effects due to possible vapours. A distinct but slightly feeble photographic impression was again obtained. This marked the discovery of "radio activity." and these active radiations were called "Bequerel Rays."

In addition to the action of these rays from uranium on a photographic plate, Bequerel later showed that uranium rays, like Roentgen rays, possessed the important property of discharging both positively and negatively charged electrosopes. This effect is most simply shown by bringing an uncovered uranium compound near the charged plate of an electroscope. It was further noted that the radiations from uranium were complex in character and consisted of three distinct types known as alpha, beta and gamma rays.

Following the discovery of the activity of uranium, the question arose whether this property was confined to uranium and its compounds, or whether it was exhibited to an appreciable extent by other substances. In the course of examination of a number of substances by the electrical method, Prof. G. C. Schmidt, and independently, Mme. Curie, found that thorium and its compounds and also thorium minerals possessed properties similar to those of uranium. Thorium like uranium emits beta and gamma rays but the gamma rays of thorium are more intense and penetrating than those of uranium. In 1905 Hahn discovered two transformation products of thorium; *i.e.*, mesothorium and radiothorium. Mesothorium has chemical properties similar to those of radium and has an activity comparable with that of pure radium.

While examining the radio-activity of a large number of minerals containing uranium and thorium; *i.e.*, pitchblende, cleveite, carnotite, chalcocite, antunite, thorite and orangite, Mme. Curie concluded that the radio-activity of uranium was an atomic property, *i.e.*, that the total radiation emitted from a compound was proportional to the amount of uranium element present, and independent of its combination with other inactive substances. It therefore, seemed probable that the large activity of some of these minerals compared with uranium and thorium must be due to the presence of small quantities of an unknown element or elements of activity greater than uranium and thorium. Relying on this hypothesis, M. and Mme. Curie

proceeded to examine whether it was possible to separate this unknown substance from uranium minerals. This led to the discovery in 1898 of two new substances, called polonium and radium, the latter of which is now known to have an activity of several million times that shown by an equal weight of uranium. Polonium was named in honor of Mme. Curie's native country.

The discovery of radium in pitchblende gave rise to further chemical examination of this mineral. In 1899, M. Debierne discovered the presence of a new radio-active substance. This he called "actinium." Hofmann and Straus, in 1901, discovered that lead separated from uranium minerals contained a new active substance which they called "radio-lead." Boltwood in 1907 discovered the presence of another radio-active substance which he called ionium.

Radium is a transition element which is derived from uranium. Radium is extracted from pitchblende and uranium minerals, the content of radium always being proportional to the weight of uranium, i.e., 3-4 parts in 10,000,000. Therefore, in 1000 kilograms of pitchblende containing 60 per cent of uranium there is present about 200 milligrams of radium.

The most important radium-bearing deposits of Europe are found in Germany and Austria. Pitchblende is found at Joachimstahl in Austria, and at Johanngeorgenstadt, Marienberg, Freiberg, and Schneeberg in Saxony, and Příbram in Bohemia. There are also mines of lesser importance in Portugal and Australia. The mines at Joachimstahl have been worked since 1517 principally for silver, cobalt and bismuth. During the last ten years they have been worked exclusively for uranium, the Austrian government having taken over complete control of them and erected a factory at Joachimstahl for the handling of the uranium ores.

Although the Austrian government has conserved its own resources of uranium and radium by purchasing the Joachimstahl mines and by carefully supervising pitchblende production, the deposits of radium bearing minerals in the U. S. are being rapidly depleted by wasteful exploitation, chiefly for the benefit of foreign markets.

Seemingly, this country has been quite unaware of the extent to which uranium ores have been sent abroad. It can undoubtedly be stated definitely that in 1912 there was obtained from American mines nearly two and one-half times as much radium as from all the other sources combined. This means that notwithstanding the fact

that our country is the richest radium bearing country, it is permitting all this valuable ore to be sent abroad, there being only one American company preparing radium salts of a high degree of radio-activity.

Pitchblende has been found in the following localities in the United States: Feldspar Quarry at Middletown, Conn.; in Hall's Quarry, at Glastonbury, Branchville, Conn.; at Marietta, South Carolina; in Llano County, Colorado; and in Mitchell County, North Carolina. The most important and the richest of these is in Gilpin County, Colorado. These mines are also rich in carnotite which carries vanadium as well as uranium and radium.

During the last year, carnotite was produced in the United States carrying 28.8 tons of uranium oxide from which 8.8 gms. of radium chloride or 11.43 gms. of radium bromide could be obtained. Practically all of this ore was shipped abroad for the extraction of radium. The value of the radium salts extracted would be \$528,000 at a minimum market price. The total supply of radium salt from all other sources including the Austrian mines was probably not more than 3.65 gm. of radium chloride, basing the production of the Austrian mines for 1912 on that of 1911 which is known. According to the U. S. government information, it is quite certain that if the ores which have been mined in this country and abroad and sold for radium production have been actually worked up into this material, there is now in existence something like 40 grams ($1\frac{1}{2}$ ounces) of radium. The price of radium salts varies somewhat. In large quantities it has been \$60,000 per gram for both radium chloride and radium bromide, although the latter contains less metallic radium in proportion to its weight than the former. In small quantities the average price has been \$80,000 per gram which represents about \$2,250,000 per ounce.

The atomic weight of radium is 226.5 and it has a characteristic spectrum line. The general properties are closely allied with those of barium, the radium salts, however, being colored in time by their own radiation.

The most interesting properties of radium are the radiations and its power to form radio-active gas or emanation. This constant radiation or emission of invisible rays may continue hundreds of years without diminishing perceptibly the quantity of metal, it taking 2,000 years for a quantity of radium to lose half its strength.

The radiations have been classified by Rutherford as alpha, beta and gamma rays. The radium itself emits only alpha rays, while the beta and gamma rays arise entirely from the radio-active products produced in the radium.

The alpha rays have very little capacity for penetrating and are readily absorbed by thin sheets of metal or by a few centimeters of air. These rays represent particles of matter charged with positive electricity the size of an atom of hydrogen, which are thrown off with a velocity equal to about $\frac{1}{15}$ the velocity of light. When its motion ceases it is transformed into the inert matter called "helium," which is a new element.

The beta rays are far more penetrating in character than the alpha rays, and consist of particles charged with negative electricity. The particles thus represented are 2,000 times smaller than the hydrogen atom and are thrown off with a velocity about equal to that of light.

The gamma rays are extremely penetrating and are not deviated by a magnetic field. Their true nature has not been definitely settled, although the majority of physicists consider them to be waves of ether similar to light or electricity.

The diagram (I) illustrates the effect of a magnetic field on a pencil of rays from radium. The radium is placed in the bottom of a narrow cylindrical lead vessel (A). A narrow pencil of alpha, beta and gamma rays escapes through the opening. If a strong magnetic field is applied at right angles with the plane of a photographic plate (B) which is placed beneath the cylinder a distinct impression is made. The alpha rays being deflected slightly to the right, the beta rays to the left and more so than the alpha rays, while the gamma rays remain unaffected. The alpha rays are absorbed after traversing a few centimeters from cylinder A.

The radio-active emanation of radium can be released by heating or dissolving it. This intensely radio-active gas contains more than $\frac{1}{2}$ of the activity of the radium from which it is derived. It is widely used in place of radium itself and can be transferred from one vessel to another and highly concentrated. The activity of the emanation is not permanent but decays to half value in 3.85 days and becomes very small after a month's interval.

The volume or amount of rays and emanations given off from a specimen of radium depends on its activity and quantity. Radium compounds, as compared with the unit of radio-activity, uranium

oxide, exhibit various degrees of activity depending on the weight and purity.

The radio-activity of radium can be measured in one of three ways, *i.e.* :—

1. The action of the rays on photographic plates.
2. The ionizing action of the rays on the surrounding gas, (electroscopic).
3. The luminosity produced by the rays on a screen of platino-cyanide of barium, zinc sulphide or similar substances.

Of the three methods mentioned the second or electrical method is most used. A disc of metal, charged with electricity and insulated from its surroundings by glass or some other good non-conductor, will retain its electric charge for a considerable time, provided that the air surrounding it is perfectly dry. If the air, however, has been ionized from any source, the charge of electricity is quickly lost. The explanation is simple. If, for example, the disc is charged negatively, the metallic surface will attract all the positive ions in its neighbourhood, and this will neutralize its own electricity, until the disc is completely discharged. This phenomenon affords a means of measurement of the rate of discharge and ascertaining the degree of ionization. Pure radium has an activity of about 1,800,000 to 2,000,000.

Pure radium salt without cessation and for an indefinite period, evolves heat enough to maintain itself at a constant temperature of 1.5°C . above other objects in a room. A gram weight gives off 100 calories every hour, an amount sufficient to raise 1 gram of ice water to the boiling point.

The action of radium on living tissues was accidentally discovered by Henri Becquerel in 1901. He carried a quantity of unprotected radium in one of his pockets for a time. A fortnight later severe inflammation appeared on the skin. This accident quickly led to a number of experimental exposures, first on animals, and later on human subjects. When meal worms were subjected to the rays of radium it so repressed their growth that they went on living as meal worms, while other meal worms unradiumized progress indefinitely, completing several cycles of beetles, eggs, meal worms, etc. Plant life is similarly affected. The life force of dry seeds is changed by exposure to the rays, the growth of the planting being retarded proportionately to the length of exposure.

All tissues when treated with radium respond in some manner but different cells and tissues of the organism react differently to the rays. For instances, the liver cells are more susceptible to the rays than the gall duct cells and the tubules of the kidney react stronger than the glomeruli. The liver as a whole is more susceptible than the kidney. The pancreas is still less susceptible. The most resistant tissues are the connective tissues and the muscles. Highly interesting and of practical importance is the action of the rays on the testicle and the ovaries. The ray affects the spermatozoa-forming epithelium, and the Graafian follicles: azoospermia may occur in a man and a cessation of menstruation in a woman without any other lesion in the organism. This highly selective action of the rays has its limitations, but if a sufficiently large quantity of the rays is used every cell in the organism may be destroyed. Old and highly differentiated cells are more resistant to the action of the rays, while the young embryonic cells, and cells in a state of active proliferation, are very susceptible. From this fact it is clear, *a priori*, that the rays must exert a selective influence on cancer cells.

As has been mentioned before, the large percentage of rays are the alpha and soft beta rays. Since they have a small penetrating power, they are all absorbed by the superficial layers of the skin, and there injure every cell they meet, acting as an ordinary caustic. On the other hand, the gamma rays represent only a small fraction of the whole radiation, and penetrate very far, consequently the rays are greatly diluted, each cell absorbs comparatively little of the rays, and the selective action becomes very apparent.

Abbé, in his early work, distinguished two methods of radium action. One the specific retrograding effect on neoplasms whose essential substance is an erratic overgrowth of epithelial, embryonal or glandular structures. The other, the occlusive blockade of highly vascular tumors (obliterative endarteritis) by irritant action (as in naevi and angiomas).

The reaction produced depends principally on the length and frequency of the exposure to the rays. After an exposure of thirty minutes, redness appears in about three days. This is accompanied by slight burning and itching. Desquamation occurs; and in about three weeks the reaction has subsided. An exposure on three successive days, one hour each, produces an inflammatory reaction that is marked. At the end of about three days redness appears. The skin becomes itchy, somewhat swollen and tender to touch. A crust

gradually appears which is of greenish yellow color and rests on a dry or slightly excoriated base. The crust resembles that of impetigo contagiosa. The crust lasts for two or three weeks and may fall off spontaneously and renew itself several times. Finally, at the expiration of four or five weeks, a pink and then normal skin surface is left. Longer exposures cause ulceration with formation of eschar. From this four degrees are clearly distinguished.

1. Simple erythema.
2. Erythema followed by desquamation.
3. Vesication with superficial ulceration.

4. Deep ulceration ; sometimes accompanied by the production of an eschar.

Von den Velden (Leipsic) has noted that the rays from radium emanation administered by inhalation and subcutaneous infection decreased the coagulation of the blood.

The principal action of the rays on diseased tissue, particularly cancer tissue, is the vacuolization of the cancer cells and the formation of scar tissue.

In radium therapy several forms of applicators and various methods of application are employed. The applicators generally used are :—

1 Flat varnished applicators, (rectangular, square, circular) the superficial area varying in size.

2. Capillary glass tubes filled with [radium salt closely packed so as to prevent any movement of the salt. Tubes of varying activity are used.

3. Radium Emanation :—

(a) Collected in glass tubes or metal containers and used with appropriate screens, exactly as the radium salts themselves are used, due regard being paid to the gradual fall in radio-activity resulting from the decay of the emanation.

(b) Dissolved in distilled water or a weak solution, and administered by drinking or injection.

Screens are employed as filters for the different rays. (These vary in thickness) (.01 to 2 mm).

1. **Aluminum.** These are principally used with short exposures in treatment of capillary nævi, pruritus, neuro-dermatitis, and superficial skin lesions.

2. **Silver.** These are most useful as shields for the glass tubes of radium when introduced into tumors, and also in treatment of keloid and vicious cicatrices.

3. **Lead.**

(a) Screens less than 0.5 mm in thickness are valuable in the treatment of flat superficial epitheliomata, leucoplakia, fibromata, and granulomata.

(b) Those exceeding 0.5 mm are used when it is desired to employ the hard beta and gamma rays only and to give prolonged applications without causing any surface irritation.

The duration of the application or exposure depends upon the condition treated, viz.—

1. "*Very short exposures*" of half a minute to three minutes according to age of the patient and character of the lesion, are principally used in the treatment of skin troubles. The apparatus is applied without the use of a screen beyond that afforded by a covering of thin rubber sheeting which is used by many operators.

2. "*Short exposures*" of five minutes to one hour's duration. Most frequently used when treating warts, senile keratoma, some forms of nævi, shallow ulcers, lupus erythematosus, etc. Very thin screens of aluminum usually used.

3. "*Moderately long exposures*" of one to eight hours are adopted when it is desired to obtain the destructive action of the rays. Used in cases of rodent ulcer, rapidly growing epithelioma, lupus vulgaris, etc. No screens being used, and the total exposure extending over two to four days.

4. "*Prolonged exposures*" of twelve to one hundred hours, or more are employed in the treatment of deep seated malignant growths, in cancer of rectum, uterus, breast, etc. Lead screens are employed and usually exposures are given in periods of six to twelve hours, with an interval of at least twelve hours between successive exposures.

Varnished applicators are usually covered with a thin layer of rubber sheeting, which effectively protects them from contact with any excretions or moisture.

When silver or lead screens are used, the passage of the gamma rays through these metals gives rise to secondary rays, which are very irritating, though their action is superficial only. To obviate this, six to twenty-four sheets of black photographic paper and one or two layers of lint are interposed between the metal screen and the outer rubber covering. When tubes shielded with lead or silver screens are introduced into the vagina, rectum, uterus, etc., they are enveloped in rubber tubing of 3 mm thickness for this same purpose. The secondary rays vary greatly in amount according to the nature of the metal and the thickness of the screens employed.

The lesion to be treated should be gently cleansed and dried, and all crusts or flakes of secretion removed. The healthy skin and tissues surrounding the lesion must be carefully protected by a layer of lead or lead-rubber sheeting, similar to that used in X-ray work, an aperture being cut in the sheeting the exact size and shape of the lesion. For external work the apparatus can be held in a fixed position with some non-irritant adhesive rubber plaster.

To retain tubes in the vagina or uterus tampons are generally used. In the rectum, nasal and buccal centers the apparatus can be attached to a silver wire handle, which can be easily bent and fastened by adhesive plaster.

The nature and extent of response of tissue treated with radium vary greatly and depend upon :—

1. "*The apparatus, screening and dosage employed.*"
2. "*The nature of the tissue treated.*"
3. "*The condition of the tissues treated.*" If X-rays, ionization, CO₂ snow, etc., have been previously used in attempts to bring about a cure, the reaction in such cases is frequently atypical and the repair is exceedingly slow.
4. "*The extent of the area treated.*" The reaction is dependent not only upon the strength of the applicator, but also upon its superficial area.
5. "*Personal idiosyncrasy.*" In this respect factors to be considered are age, sex and temperament, susceptibility to active rays generally—as in persons who suffer from freckles or solar eczema—hyperidrosis, exalted vasomotor sensibility, etc.

With a few patients the time of reaction is much delayed or exceedingly prompt, in which cases it is impossible to discover why this difference should be.

The increased susceptibility to changes of temperature over areas that have been treated with radium is very remarkable, and many patients who have had rodent ulcer and superficial skin-lesions cured with radium stated that they experienced great discomfort at the site of the old lesion when very cold or very warm air played upon it. This susceptibility returns to normal in a few months.

A very marked condition of lethargy is invariably noted in patients subjected to long exposures with large quantities of heavily screened radium.

The best results in use of radium therapy have been accomplished in superficial new growths, although some promising results have been obtained in the treatment of tumors in general and also internal diseases. In a series of 181 cases of skin cancer reported by Williams and Ellsworth (Boston) 154 were entirely healed. Statistics attribute about 96 per cent cures in skin cancers. Promising results are being obtained in cancers of breast, rectum, uterus, etc. In the treatment of uterine cancer Bumm (Berlin) combines the Roentgen rays and mesothorium rays by a new and perfected technic. It permits intensive large doses without the mixing of normal tissue. In twelve cases thus treated all the morbid symptoms disappeared in less than ten days. The fibers of connective tissue undergo hyalin degeneration and become hard under these rays. Whether this resulting induration destroys the cancer cells by a purely mechanical action or whether the cancer cells die from a specific action of the rays, is not known at this time.

In severe cancers which are inoperable radium will often bring about results not obtained by any other method; *i.e.*, hemorrhage may be arrested, discharges diminished and rendered less offensive, ulceration often healed, and pain greatly relieved.

Few good results are reported in Paget's disease. Rodent ulcer is one of the most amenable of the malignant diseases. In the treatment of keloid radium is now one of the best known remedies, especially in young subjects. Satisfactory results are being obtained in the treatment of many of the forms of fibromata.

Among the skin diseases in which promising results are being noted are pruritis, chronic eczema, psoriasis, lupus vulgaris, lupus erythematosus and lichenifications of the skin.

In the sphere of internal medicine much research is now being done. The greater part of the work being done with the radium

emanation. Kraus reports the results in 41 cases of gout, sciatica, neuralgia, angina pectoris, joint troubles and tabes in which radium exposures were used. Only seven failed to show any improvement. The best results were obtained in ten cases of sciatica, and next to this in turn in sub-acute and chronic rheumatism, gout, intermittent claudication and some of the consequences of cerebral hemorrhage.

HOMOEOPATHY.

In 1908 Dr. J. H. Clarke published the first provings of radium bromide. These provings were imperfect because of the fact that he neglected the complete laboratory and physical tests which are now demanded in scientific medicine. Moreover, he limited his work to the thirtieth potency. Another serious criticism of his work is the fact that he incorporated into his data the results, noted by Dr. Burleigh Parkhurst, of radio-active water which is in no sense radium bromide.

In 1911 (Journal Am. Institute, August) W. H. Dieffenbach of New York published "The Proving of Radium Bromide." Complete physical and laboratory tests were made of all provings and the 30X-12X and 6X potencies were employed. The proving was made from the purest obtainable radium bromide of an activity of 1,800,000 to 2,000,000, the original trituration being made personally by Mr. E. W. Runyon of Boericke, Runyon Co., of New York, in presence of Prof. Pegram of Columbia University, who weighed out a definite quantity of the radium.

After a lapse of about two years since his proving, Dieffenbach has published the "Verifications of Symptoms of the Proving of Radium Bromide" (Chironian, Dec. 1912). I will quote the chief verified symptoms as noted by him:—

- I. Severe aching pains all over the body, with restlessness ; better by moving about. Pains gradually subside after continued exercise.
- II. Periodical sharp pains in joints ; better after continued motion in the open air.
- III. Burning sensation of the skin, itching all over the body.
- IV. Vertigo.

- V. Dryness of the mouth (especially after etherization).
- VI. Colicky pains in abdomen, with passing of foul flatus.
- VII. Catarrhal or interstitial nephrities with rheumatic symptoms corresponding to provings.
- VIII. Irregular or delayed menstruation, and dysmenorrhea.
- IX. Dry, tickling cough, better at night while lying in bed.
- X. Dull backachè, lower lumbar region, better after exercise.
- XI. Sharp pain in the small joints, dull pain and soreness of muscles. It is rheumatism and gouty arthritis especially that verifications of symptoms have accumulated.
- XII. Pruritis, itching of the skin, with burning; chronic acne, has been relieved.

CONCLUSIONS

1. There is no danger from radium in the hands of those who understand its use and it has an advantage over X-ray in that the out-put of its radiations is uniform in amount and quality, whereas that from an X-ray tube may be very uneven as regards both of these.

2. Radio-therapy offers a painless and elegant method of palliative treatment after lymph and blood vessels have become involved, although the rays are limited to a narrow field of action.

3. Radium is a useful adjunct to the treatment of all cases, first as a prophylactic after operation, and, failing operation, the next best method we possess.

4. Radium is more successful when it is the first treatment employed than when it is used after operation, X-rays or other forms of treatment, although under these circumstances it does well.

5. The application of pure radium salts in sufficient amounts properly used is a harmless and efficient method of treating superficial new growths.

6. Its analgesic action is noteworthy.

7. For keloids, unless extensive, it is by far the best known remedy.

8. When the technic becomes so perfected that all cancerous tissue can be effectually destroyed by rays applied from all sides, then radio-therapy can be regarded as a certain cure for cancer.

LIST OF RADIO-ACTIVE ELEMENTS (RUTHERFORD).

Element	Radiation	Half Value Period
Uranium	... Alpha ...	... 6 X 10 ⁹ years
Uranium-X	... Beta & Gamma	... 24.6 days
Uranium-Y	... Beta ...	... 1.5 days
Ionium	... Alpha ...	... 20,000 years &
Radium	... Alpha & Slow Beta	... 2,000 years
Emanation	... Alpha ...	... 3.85 days
Radium-A	... Alpha ...	... 3 minutes
Radium-B	... Beta & Gamma	... 26.8 minutes
Radium-C	...	
C ¹	... Alpha & Beta & Gamma.	19.5 minutes
C ²	... Beta ' ..	... 1.4 minutes
Radium-D	... Slow Beta	... 16.5 years
Radio-Lead	...	
Radium-E	... Beta & Gamma	... 5 days
Radium-F	... Alpha ...	... 136 days
Polonium	...	
Actinum	... No Rays ?
Radio-Actinium	... Alpha & Beta	... 19.5 days
Actinium X	... Alpha ...	... 10.5 days
Emanation	... Alpha ...	... 3.9 seconds
Actinium-A	... Alpha ...	... 0.09 seconds
Actinium-B	... Slow Beta ...	... 36 minutes
Actinium-C	... Alpha ...	... 2.1 minutes
Actinium-D	... Beta & Gamma	... 3.47 minutes
Thorium	... Alpha ...	... 3 X 10 ¹⁰ years
Mesothorium	... No Rays ...	... 5.5 years
Mesothorium 2	... Beta & Gamma	... 6.2 hours

Radio-Thorium	...	Alpha	...	...	2 years
Thorium-X	...	Alpha & Beta	...	...	3.64 days
Emanation	...	Alpha	...	...	54 seconds
Thorium-A	...	Alpha	...	...	0.14 seconds
Thorium-B	...	Slow Beta	...	...	10.6 hours
Thorium-C	...				
C ¹	...	Alpha	60 minutes
C ²	...	Alpha	Very rapid †
Thorium-D	...	Beta & Gamma	3.1 minutes

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PUTTING AWAY CHILDISH THINGS.

BY DEWITT G. WILCOX, M.D.

As one stands on the deck of an ocean liner, sees the last gang plank lowered, watches the remaining hawser unslung, and senses that mighty citadel of steel slipping away from the stable shore, he instinctively feels that he has put away from him, not only many of the material things which are woven into the fabric of his life, but many of the traditions which have become part of him. For the nonce he has put away an old life, with all its associations and companions, and has entered a new world. In leaving the shore and sailing out into the ocean the transition is so rapid and subtle that were one to close his eyes for a brief period he would, upon opening them, be startled at the transformation. One moment it was the unshaken earth, the next the unstable sea.

In our beliefs and views of life there is a close analogy to this moving picture. For years, nay it may be for a life-time, we have been following an idea, a thought, a belief, even a conviction, when suddenly the mental hawser is slipped and in the twinkling of an eye we see that once well grounded belief slip from our mental grasp and we are afloat upon a sea of strange surroundings. About us are bobbing weird craft with unreadable names, fascinating because of their unreality. As

an illustration, we have, since the time of man, had the conviction borne in upon us that we are earth bound creatures; that the upper domain of air and limitless space has been and always will be forbidden territory to us. Even the daring attempt of Darius Green had not shaken that conviction, when suddenly in a night a magic force is born and snatches us from off our earth-clogged feet and sweeps us aloft into those forbidden realms where theretofore only imagination dared soar. We have become creatures of the air before our mind has adjusted itself to the change.

Note how the Darwinian theory snapped the cables of many whose stable belief was apparently anchored to the everlasting rocks. Then came the discovery of ions which showed that our old habitation of the molecular world was out of date and good only for the scrap heap, and that we were living amongst infinitesimals of which we had not yet dreamed.

Again the world-old belief that has made man man, and woman woman, in that he was master and she was slave or plaything, is being so rudely jerked from its heretofore unmoveable moorings that we poor men do not know whether we are floundering upon an unknown sea with nothing more stable to grasp at than a banner marked, "Votes for Women," or falling through space with nothing softer to alight upon than that of an "equal suffrage platform." One moment we fear our end has come, and the next moment we fear it will not.

In all these transformations we are putting away childish things. The man who never leaves his own shore, who has never experienced the slipping of the cables, is apt to become narrow in his vision and dwarfed in this growth. So it is with the mind which has anchored itself to old beliefs and refuses to investigate new ones. Not all of these mental voyages, however, are profitable and safe. There is many a doctrinal "Titanic" and "Empress of Ireland" ship which promised well even better than older or more modest craft, but which has carried its venturesome travellers to ruin or death because such ships were not correctly chartered, or they were run contrary to the fundamental rules of moral sailing.

When Paul wrote his letters to the Corinthians (who seemed never to have answered them), he said, "But when that which is perfect is come, that which is in part shall be done away. When I was a child I spake as a child; I thought as a child; I understood as a child; but when I become a man I put away childish things."

The world is becoming full grown. That which was in part is being cast aside. It is putting away childish things. Whilst on the one hand we must avoid the "Titanic" and "Empress" ships, we must not, on the other hand, refuse to change our beliefs lest we err.

One of the childish things which we are putting from us, and which is fast fading into the mist as the ship slips forward, is our estimation of morality and the application thereof. The world has today placed a higher value upon morality than at any time in its history, and it is fast becoming discriminating judge as to what constitutes morality.

It is also putting away the childishness of setting up one standard of morals for men and another for women. In this fight for a better and uniform standard of morality the doctor has become a conspicuous soldier, and we as a national society of physicians are deeply concerned with all problems where the moral and physical welfare of the race is affected.

In the fight against prostitution we have just begun to make progress because we have put away the childish but world-old belief that prostitution is a necessary evil and must therefore be recognized by segregation and license. Someone has well said, "If it is necessary, it is not an evil; and if an evil, it is not necessary." No evil has ever been or ever will be eradicated by a compromise, and segregation is but a compromise. Europe and Asia have learned to their sorrow that segregation and certification instead of checking the evil tends but to perpetuate and extend it. Only last month I read in a medical journal an editorial which astonished me beyond measure of its clinging to the worn-out belief that we must "compound a felony." The

closing sentence of the editorial was that "the moral element in a community, unfortunately, cannot abolish prostitution; distressing as it may seem, the greatest good in vice crusades can be accomplished by effecting compromises with evil." If a thing is evil it is evil, and to compromise with it is to give it recognition as good. That editor has not put away a very childish thing; he sees through a glass darkly.

No greater slogan for the control of evil was ever devised than the one word, *Publicity*. Because of that fact the "Kenyon injunction red light bill" has is working great good in that it not only seeks to evict the inhabitants of houses of prostitution, but places the premises, the furnishings, and the inmates under strict surveillance of the law so that none of them can ever again be used for like purposes. Herein the physician becomes morally responsible for using his influence in forwarding and endorsing such a law and placing it upon the statute books of all our states. The working of that law has demonstrated in three states that prostitution can be abolished.

The next step towards radical betterment in this line is that of reporting venereal diseases. There can be no dodging this responsibility. It must come, and it rests largely with the medical profession to bring public opinion up to the point of demanding it. We can all well recall the hue and cry which went up when the question was first agitated relative to reporting tubercular cases, "the injustice to the patient and his friends," but how quickly that adjusted itself when once in operation, and how salutary has been the innovation. The same would prove true if there were in force a law requiring the reporting of venereal diseases. Not only should such diseases be reported, but the law should go still further and set a close watch upon the victims of these diseases, reducing to the minimum the possibility of spreading infection. This could be done by making the doctor, who reports the case, a probation officer over the patient, holding him (the patient) to a strict account for his conduct until cured, thus placing him beyond the possibility of carrying the disease further. One of the requirements of this probation should be a strict pro-

hibition against marriage while under such treatment. We are only just awakening to the full realization of the ravages caused by gonorrhea and syphilis. Ex-Secretary Stimson said in his report: "The high percentage of venereal disease continues to be the reproach of the American army, and *the daily average number of those sick from that cause during the past calendar year was larger than the daily average number of those sick from all other of the more important diseases combined.* I believe that the ultimate causes which make the record of our army in this respect shameful beyond that of the army of any other civilized nation are inherent in our *own* shortcomings as a *nation* in dealing with this matter. So long as in our *civil* communities, and particularly our larger cities, we continue to close our eyes to the magnitude and extent of the evil and refrain from attacking it with all the weapons which modern scientific knowledge places in our hands, it cannot but be expected that the younger men of our army, leading the abnormal life of the soldier, will show the effect of the evil to a marked degree."

The Director General of the Army Medical Department in England reported this year that 31·8 per cent of the total disability amongst members of the British army for the year 1910 was due to venereal diseases. He further reported that from 1900 to 1909 the army recruiting station rejected 1,516 applicants because of syphilis, while there were only 725 rejected because of tuberculosis.

If it were true that only the guilty suffer by the prevalence of these loathsome diseases, we might perhaps be content to sit back with folded hands and say, "Let nature be the jailer and the executioner."

But note these significant figures, which smite our apathy like whipcords: In England during 1910 the number of deaths due to syphilis amongst infants under one year of age was 1·23 per hundred thousand; the same due to diphtheria was ·30 per hundred thousand; the same due to gastrointestinal catarrh was ·58 per hundred thousand. Nearly two and a half times as many infants under one year of age died in England in one year

from congenital syphilis as died from gastrointestinal catarrh; and what is true in England is approximately true throughout the civilized world.

We are carrying on a nation-wide campaign for pure milk and baby hygiene; we are enacting laws, educating the people, and insisting that the bottle-fed infants shall be protected and given a chance to live. All of this is excellent and highly necessary, but consider that where one infant dies as a result of impure milk nearly three die of a preventable disease against which we are scarcely raising a finger.

Again we have put away the childish thing of fearing to tell our children, when they reach the age of understanding, that great truth, the correct understanding of which bears so heavily upon their future moral and physical welfare, reproduction, or what I think a better term, "personal hygiene." The good already attained by following the sane and sensible method of giving the growing child the essentials of the physiology of reproduction is already apparent in the improved moral tone of the children and youth.

Ella Flagg Young, Superintendent of the Public Schools of Chicago, said last week before the Biennial Convention of the General Federation of Women's Clubs, in speaking of the accomplishment of this kind of teaching in the public school, that the girls enlightened left the lecture halls with uplifted chins in consciousness of the womanhood that was in them, instead of with the smirks of ignorance. Mrs. Young said that when it became apparent that public sentiment demanded the teaching of personal hygiene in the schools here—she was reluctant to take the responsibility.

"I went to Dean Sumner," she said, "and I told him that it was the duty of the church. He declared that it was the duty of the public schools. We argued it long and often, but finally \$10,000 was appropriated by the city to get the lectures, and I had to it.

"I listened to the lectures before they were made public and became convinced of their value. They teach respect for

the body, and this respect will solve the problem of personal hygiene."

Could we have our choice and could we be assured that all children could get such information from enlightened, moral parents, we should naturally much prefer that the boys and girls should receive this delicate information from the home and at the fireside, but as such is obviously impossible, it is much better that the child should receive it in the class room from a competent physician, man or woman, than not get it at all. I do not believe that we are yet ready to have the subject of sexology taught in open classes from a text book; first, because we have neither the proper books nor the proper instructors; but we are ready to have the younger children taught the fundamental truths of biology in such a way that their minds will be amply prepared for the reception of the greater and higher truths which will come later by a personal talk. It has been interesting to me to note that in the vast majority of instances the men and women who are opposed to this kind of instruction, either in the home or school, are those who have no children or who come least in contact with them. Here again the physician has a responsible part to play, and it becomes his duty to prepare himself to aid in this forward movement. He should, however, keep well in mind the sacredness of his mission in thus imparting information to the impressionable, plastic mind, upon a subject so vital to the stability of a nation's physical and moral welfare. Such a physician should have a high sense of ethics and impart the truth with all the dignity, sobriety, and truthfulness which it is possible to put into the transmission of a subject so delicate.

It is but a step from the subject of sexology to that of eugenics, another place where our childish ideas must be surrendered. I don't know but that some people feel toward the term "eugenics" as did the Englishman toward the term "Monroe Doctrine." A friend met him on the street and said, "Hello, Smith! I understand you don't believe in the Monroe Doctrine," "You are mistaken," said Smith, "I do believe

in it. I swear by it, I would lay down my life for it. What I said was that I did not know what it was."

An English poultry breeder has said that he could breed the stars and stripes, or the Union Jack upon the wings of a fowl if you would give him time; and what the poultry and stock breeder can do for the physical characteristics of the animals, the eugenist can do, in part, at least, for the physical, moral, and intellectual improvement of the human animal, if you will but give him time. The opponents of this teaching claim that it will do away with all sentiment, and even love, in marriage, and make of it a physical bargain for breeding children. Moreover, that it will work a great hardship to the physically unfit. But the contrary is quite the fact. Marriage without sentiment and love is an abject failure, and any Utopian plan for the betterment of the race, however meritorious, will reek of failure before it accomplishes its end, if love is not the bulwark of the union.

The whole idea of eugenics is to teach the children to think in terms of good health, just as we are and have been teaching them to think in terms of honesty and truthfulness. A child so grounded in the lesson will instinctively be honest and truthful, and shrink from those who are not. To think in terms of good health means to shrink instinctively from selecting as life partners the defective, the helpless, the undeveloped, or the hopelessly ill.

While we perhaps may not have ambition to stamp the stars and stripes conspicuously and indelibly upon the tender anatomy of every new-born American child, lest his patriotic desire to exhibit it upon all occasions lead him into trouble; yet if the laws as enunciated by Galton and Lamarck and Mendel prove to be dependable, we can stamp our American children with something far more desirable than the more imprint of the flag. We can stamp them with all that America stands for: patriotism, sobriety, sanity, morality, industry, honesty, and an epitome of the Golden Rule.

As one writer puts it, "Why should we utilize all this new knowledge, all these immense possibilities of control and creation, only for pigs and cabbages? In this era of conservation should not our profoundest concern be the conservation of human protoplasm?" As another writer says, "There is no wealth but life, and if the inherent qualities of life fail, neither battleships nor libraries, neither symphonies nor free trade, nor tariff reform, nor anything else will save the nation."

How then may we apply to a practical end the knowledge which the study of eugenics gives us?

First, by creating an enlightened public opinion. No law was ever successfully administered which did not follow a definite demand of public opinion, and an enlightened conscience. Hence we should go slow in the enactment of laws looking toward restriction of marriages within too circumscribed lines. At present we have reached a stage of public enlightenment where we can prohibit certain classes from marrying, and receive the support of public opinion, such as the insane, feeble-minded, epileptics, degenerates, confirmed criminals, sexual perverts, and habitual alcoholics. We can hold in abeyance marriage permission in such cases as the syphilitic, gonorrheic, the tubercular, and paralytic. We can demand a reasonably clean bill of health in all marriages. But, far better, we can continue in season and out of season a campaign of education until it will become as natural for young people in selecting life partners to exercise the same caution based upon physical and moral fitness, as it now is for them to select partners of sound mind.

Royalty rarely marries outside the realm of royalty. Jews rarely marry Christians. Catholics seldom marry Protestants. Yet they are all in one society, all mingle freely. Early education has influenced the mind of the youth so indelibly with certain facts, that the seeker for a partner finds no attraction with one of another creed or sect.

Just so would education in eugenics impress itself upon the youth of the next generation, that physical weakness, super-

ficiality of mind, tainted family history, the exhibition of traits of moral obliquity, or the slightest evidence of a personal disease would so turn the mind of the seeker or the sought that love could not find lodgment.

Again we follow the admonition of the apostle and put away a very cherished "childish thing." In any question pertaining to the welfare of the human body the physician becomes the high priest, and his word and attitude goes far toward moulding public opinion upon that question.

The physician's attitude has ever been on the side of physical betterment for the race in so far as his knowledge permitted him to go. True, he has erred many times through tradition, prejudice, and ignorance, but a persistent determination to reach rock-bottom truth has ever characterized his actions.

There is one subject today upon which his attitude has much to do with the physical welfare, the sanity, and even the normal perpetuity of the human race. That subject is alcohol. Until recently his attitude upon this subject has been clouded by a mist of verbiage in trying to say that alcohol is a good or a poison. That question can now be swept aside entirely in the practical determination of the matter; If the eating of frankfurts were adequately proven to cause physical, mental, and moral deterioration, defective progeny, and a numerical death rate in excess of typhoid fever, what would it avail to prove that frankfurts were a food? It would be a food like the Scotchman's fiddle with a "heavenly croak." Thanks to our painstaking pathologists, laboratory workers, chemists, clinicians and specialists, we have at last reached something like unanimity upon the question of alcohol.

The questions which now seem settled are: (1) That alcohol has no place in medicine; (2) That whether food or poison, its consumption is productive of physical and mental degeneracy; (3) That its effect upon the higher moral centres is the one great productive factor in criminality; (4) That its baneful influences are inherited to the extent of pro-

ducing mental defectives, idiots, imbeciles, epileptics. and lunatics. With a practical unanimity of opinion upon these four points, what is the duty of the medical profession towards alcohol?

True, there are some men yet in the profession who will question the statement that alcohol has no place in medicine, but it is up to them to show what that place is. Certainly its old time "habitat" as a "stimulant" has been cleaned out utterly routed. Instead of being a preventive of *any* disease, statistics and the lantern slides show conclusively it is the best possible "persuader" of *all* diseases because it lowers the opsonic index and the body resistance. That it hastens a fatal termination of all brain, pulmonary, kidney, liver, circulatory diseases is likewise proven.

Where, then, has it a place in medicine except to occupy the nurse in rubbing it on the outside of the body? Another misunderstood phase of the alcohol question seems also of immediate solution; that is, the damaging effects of even *small* doses of alcohol. As guardians of the public health there is but one attitude for the medical profession to take upon this question of alcohol, that is, its prohibitive use.

No compromise will effect the desired end. All of our leading alienists are of one mind, namely, that alcohol is the greatest single independent cause of insanity.

There is still another side of this alcohol question, and perhaps the most important side, and that is its effects upon the higher moral centres. Society can exist only by virtue of a full and normal recognition on the part of each individual of the mutual rights of one another. When a large number of individuals through the influence of a drug environment or heredity begin to have a lessening of the perceptions of right and wrong, then the real foundations of society are in jeopardy. One of the early effects of alcohol upon the novice is a lessening of that appreciation of the right relations of things which makes him a normal being. He then commits errors of judgment, has a lessening of the will power, commits

infractions of social laws, disregards authority, and ultimately commits crime. Then come in his wake the alcoholic offspring, born with a warped judgment and a perverted moral sense. Thus is the criminal class created.

The use, either moderately or in excess, of alcohol is no longer a question of temperance or of sentiment. It is no longer a question of personal privilege. It is a question of social economics. There is no question of sentiment or personal privilege in allowing the leprous patient to mingle with normal beings, because his presence there is a menace. A man cannot claim the personal privilege of taking alcohol when by so doing he runs the risk of becoming a greater menace to public than a leprous patient would be. It is the duty of the profession to being a campaign of education with that end in view :—to give the public a full knowledge backed by the endorsement of a united profession that alcohol even in moderate doses will produce cell irritation, in proportion to its continued use, which ultimately for the body, will produce increased blood pressure, impairment of the arterioles, deranged function, destruction of tissues, premature death ; for the brain, perverted judgement, moral obliquity, diminished will power, crime ; for the offspring, physical instability; mental deficiency, idiocy, epilepsy, insanity ; for society at large, the needless expenditure of millions of money, for hospitals, asylums, poor houses, potters' fields, criminal courts, policemen, jails, penitentiaries, executioners ; and, finally, poverty, misery, and a hell on earth for millions who might find it a heaven.

We are just beginning to reach that state of mental maturity when we no longer look upon crime as a thing emanating from the totally or partially depraved. In fact, the so-called class of depraved is beginning to be regarded as the mentally ill, the defectives, or the unfortunate victims of circumstance. Heretofore this subject has been regarded as one distinct by itself and to be treated only by the criminologist, the jurist, and the legislator ; but our eyes and our understanding are beginning to see and comprehend that there is a physical side

of the question which must be reckoned with. That there is a "psychology of crime" we cannot doubt, and it behooves us as physicians to study the subject thoroughly in all its phases. That the criminal must be punished for his crime, there can be no doubt; but the punishment, to be of lasting benefit, must be educational and corrective. If the criminal is a defective, or a pervert, then his punishment should be administered in a form to cure him of the perversion, or if incurable, to forever safeguard him from further crime, and also to prevent him from reproducing his kind. To allow such perverts or defectives to propagate their species is to have to deal forever, in increasing ratio, with crime and the criminal.

Arthur McDonald of Washington, in a series of articles makes a strong and unanswerable plea for the establishment of laboratories for the study, not of *crime*, but of the *criminal*, just as the physician studies cancer, tuberculosis and cholera. He says :

"Government pay out millions to catch, try, and care for criminals, but give very little to study the causes that lead to crime. The patient and extended study of man, especially study of the child, is to gain more definite knowledge about him and a deeper insight into his nature. The time has certainly come when man, as he is, should be studied as much as nature."

"The prison should be a reformatory and the reformatory a school. The principal object of each should be to teach good mental, moral, and physical habits. Both should be distinctly *educational*.

"It is detrimental financially, as well as socially and morally, to release prisoners, when there is probability of their returning to crime, for in this case the convict is much less expensive than the ex-convict.

"The ground for the imprisonment of the criminal is first of all, *because he is dangerous to society*. This principle avoids

the uncertainty that may rest upon the decision as to the degree of freedom of will ; for upon this last principle some of the most brutal crimes would receive a light punishment. If a tiger is in the street, the main question is not the degree of his freedom of will or degree of guilt. Every man who is dangerous to property or life, whether insane, criminal, or feeble-minded, should be confined, but not necessarily punished.

"The publication in the newspapers of criminal details and photographs is a positive evil to society, on account of the law of imitation ; and, in addition, it makes the criminal proud of his record, and develops the morbid curiosity of the people ; and it is especially the mentally and morally weak who are effected.

"It is admitted by some of the most intelligent criminals, and by prison officers in general, that the criminal is a fool ; for he is opposing himself to the best, the largest, and the strongest portion of society, and is almost sure to fail."

"In another way is the physician called upon to safeguard the public, and that is in watching immigrants more closely. In this great country of ours, with its millions of unused acres, we might as well talk of getting along without rain or sunshine as to talk of developing our country without the aid of immigration. A few years ago I stood in the office of the Inspector of Immigration at Ellis Island and heard him say this : "If there had been no immigration to the United States during the last one hundred years, and had the negro multiplied by propagation at the same ratio as he has in the past, this country would today be as black as San Domingo." But there is a reasonable limit to this influx, necessary though it be, and if we placed as much emphasis upon the physical and mental qualifications of those whom we admit, as we do upon the racial qualities, we would be safeguarding the future of our country immeasurably more than at present. Not only should the individual be scrutinized more searchingly as to his physical and mental standing, but his immediate progenitors should

be considered as well. The offspring of defectives and criminals should be placed upon the probation list and admitted only after they have demonstrated their ability to make good and law-abiding citizens.

The Editor of the *North American Journal of Homœopathy* says: "Congress should amend the Immigration law in the matter of the time within which deportation can be made. The present limit is three years, but this period is too short and should be increased to five years, the time which must elapse before an alien can become a citizen of the United States. An alien who is incurably defective, or a confirmed criminal, should be deportable at any time after arrival but subject to the discretion of the public authorities when he has lived in the United States more than five years. This would relieve the overcrowded condition of our asylums, hospitals and prisons and ultimately reduce the heavy burden now imposed upon the various state treasuries. The 2,234 removed from New York state in 1913 at a total expense of about \$37,000, would cost \$3,485,040 to support. Removal is therefore, a far more economical method of dealing with dependent aliens and non-residents than maintenance, while it is also the best for such persons as it restores them to their homes and to the care of their friends."

Thus far I have tried to show some of the subjects wherein we as physicians are particularly related to the world about us. I have endeavored to point out some of the old methods or customs, which we have apparently outgrown, and which should, like childish things, be put away from us. Now I would like to point out some things which are not childish, and which should not be put away.

Changes do not always mean progress. There are certain old-time customs and traditions which are seemingly so good that they cannot be improved. One of these is the tradition that medicine is a profession and not a trade. The tendency to commercialize it is one of those changes which should be strangled in its infancy. From the time, of Esculapius,

Paracelsus, and Hippocrates, up to the twentieth century, medicine has had its ideals which placed it high above commercialism. The physician is engaged in a humanitarian order of work, which cannot be weighed by gold, nor measured by the standard of the dollar bill. Some of it is priceless, and to seek at all times to keep it down to the sordid value of money, stultifies the physician and makes ignoble his profession. I feel that we cannot too forcibly impress upon the minds of our medical students the iniquity of engrafting commercialism in its crude form into the medical profession. I sometimes fear that in our efforts to teach the students to be businesslike in their work we are giving them a license to commercialize it. It is here that we should draw the line distinctly between straight, honest, old-fashioned business methods and those which are employed in the present day to drum up business, by paying well for securing it.

The young physician just out of college is advised by his well-meaning business friends, whose conception of success means a large money income, to use business methods to get business, to advertise, to pay commissions, to discount for cash, to treat lodge members or communities at a wholesale price, to do work on a cash basis, to refuse credit to patients who are behind in their bills, to make no discrimination in prices to rich or poor, to do no work for nothing, in fact, to make of himself a doctor tradesman, putting out of his heart all humanitarian feelings, blinding himself to the fact that he is distinctively called upon to minister to the unfortunate and afflicted, and schooling himself to look upon sickness, suffering and deformity as so much raw material which he is to make over into a finished product at so much per, for spot cash only. The strange part of it is that when these same business men see the doctor practice these methods they are the first to condemn him, as instance the following :

Some years ago the public press reported throughout the country the action of a certain young physician in a town in Pennsylvania. He was called by someone to attend a child

who had been injured upon the street. The child had been carried to a near-by drug store, where the doctor found him with a bad scalp wound. As the usual curious and interested crowd surged about on the outside, the doctor skilfully cleansed and sutured the gaping wound and applied the bandages. Then turning to the friends he asked who was responsible for the payment of his bill. Nobody responded. Inquiries through the crowd failed to find a responsible party. Then he did the supposedly high class thing which every upto-date business man feels he has the perfect right to do. He took back the goods for non-payment. He removed the bandages and out the sutures, leaving the wound as he found it. But the crowd did not leave him as they found him. They rode him on a rail and mobbed him out of town, as they ought to have done, and as he deserved.

The crowd had not been educated up to the very latest idea which some would advocate, that medicine has no traditions, that it is a trade to be followed with business methods. They still believed that medicine had as its basis a humanitarian quality which can never be abrogated. And yet I have not the slightest doubt that the very business men who took the leading part in mobbing that doctor for being business-like, were men who sell furniture on the instalment plan, and when the party has paid half the price, but through sickness cannot complete the contract, take the furniture back and allow no rebate.

This all illustrates how it is engraved into the mind of the public that medicine is a profession with a humanitarian foundation and can never be a trade unless we, the doctors, prostitute it to that low level. Are we going to do it? Are we going to allow even a few of our money getting doctors to do it, and thus smirch us all? I say, "Never!"

Having once relieved suffering and disability and placed the patient where he can again earn his living, and then demanding all the money which that patient can possibly earn for months to come, dispels somewhat the glamour of humani-

itarianism. The highly drawn pictures of old Doctor Maclure of the "Bonnie Briar Bush" may be idealistic, but it is none too high to serve as a pattern in this day of money getting. Imagine, if you can, Doctor Maclure receiving from the great London surgeon, Sir George, who came to operate upon Jamie's wife, Annie, a rebate or commission for calling him. If such methods were common in those days Barrie could never have written the book; nobody would have understood the character. Perhaps some caustic people may say it is equally impossible to imagine a great surgeon doing as did the London surgeon in the "Bonnie Briar Bush," who, when he learned from Dr. Maclure how poor was Jamie, tore up the check tendered him in payment. But there are many, many surgeons even today who will allow no check to be tendered under like circumstances.—*The Journal of the American Institute of Homœopathy*, August, 1914.

(To be concluded.)

EDITOR'S NOTES.

Tennis Elbow.

Dr. W. P. Cones has published recently an important paper on the condition known as "epicondylitis," or "tennis elbow," which has first described by Bahr in 1900, and has been principally studied on the Continent. It is described as not uncommon in those who take much exercise, particularly lawn-tennis players. But Dr. Cones has found that athletics in which strenuous movements of the arm play an important part are not the only cause of the trouble. The history is usually as follows. Immediately after a stroke, occasionally some hours or days afterwards, pain is felt in the elbow, usually the right, near the external condyle. This pain may be so severe and sudden as to disable the arm temporarily. It is usually increased by extension of the forearm, not so much by flexion, and may be intermittent or constant, returning immediately the exercise is resumed. Examination soon after injury usually shows no marked swelling. Movement of the elbow is not, as a rule, limited, but there may be great pain on forced extension in the neighbourhood of the external condyle. Pronation and supination are, as a rule, painless. On pressure, an exquisitely painful spot is found over the external epicondyle. Here much pain is felt on full extension of the forearm and radiates down to the fingers. The pain is increased when the fingers grasp an object. It is also brought on by such movements as reaching a book on a shelf or putting on the coat. Sometimes there is a suggestion of a slight thickening over the external epicondyle. After a period of weeks or months, with or without treatment, the pain gradually disappears and the patient may again take up his favourite sport, with, however, possibility of speedy recurrence of the trouble. As to the nature of the lesion, several views have been brought forward. Tears of the fascia or of some muscle bundle attached to the epicondyle, as well as some nerve implication, have been

suspected. Dr. Coues suggests that some of the muscles, exerting a powerfull pull, tear off their attachments, perhaps carrying small pieces of bone with then. If the exercise is repeatedly attempted the process may recur in lesser degree, producing some periostitis of the external epicondyle. This may also be kept up by the ordinary movements of the arm. Simple rest of the arm for a short time does not cure the condition. It may become quiescent and the patient think himself cured, but the first stroke of his racket will bring back all his pain and disability. Dr. Coues reports the following cases. After half an hour's hard play at lawn tennis a man felt a sharp pain on the outer side of the elbow and forearm on making back-hand strokes, which require a fixed position of the arm half way between pronation and supination, and there was almost complete inability to make such strokes. At the same time fore-hand strokes, requiring simple flexion only, were made with little discomfort. On examination an exquisitely painful spot was found on the epicondyle. The disability and tenderness persisted three months after the injury. It was questionable whether there was not slight thickening of the periosteum over the epicondyle. In another case a left-handed athletic man while playing golf noticed pain in the right elbow immediately after a stroke, with a distinct sensation of something tearing in the neighbourhood of the external epicondyle. The injury was not severe enough to stop the patient's play that summer, but an exquisitely painful spot appeared over the external epicondyle, where flexion and extension of the fingers caused pain. Considerable pain and disability remained for six months, at the end of which the arm was not well. In this, as well as in another case, a skiagram showed a small spicule of bone which appeared to have been torn from the external condyle.—*The Lancet*, July 18, 1914.

The Prevention of Venereal Diseases.

We understand that conferences have recently been held, under the chairmanship of Sir Thomas Barlow, to consider the formation of a National Council for Combating Venereal Diseases. Those present have included Sir Rickman Godlee, Sir Francis Champneys, the Bishop of Southwark, Major Leonard Darwin, Sir William Osler, Sir Clifford Allbutt, Sir Henry Morris, Sir A. Pearce Gould, Sir Wilmot Herringham, and Mr. Charters Symonds. It has been decided to form such a national council, consisting of representatives both of the medical profession and the general public. With this object a circular letter is about to be issued stating the objects of the movement, explaining its organisation, and inviting the recipients to join the council. This movement is in no small degree the outcome of the work and recommendations of the special committee of the Royal Society of Medicine, which has been in existence now for over two years, and which originated in a conference between the Royal Society of Medicine and the Eugenics Education Society.—*The Lancet*, July 18, 1914.

Golf Balls: A Warning.

The structure of a golf ball does not attract as a rule the interest of the player; his only concern about it is that its composition shall be durable and such as may add possibly to the flight of the tee shot, and that it shall be true on the green. The ball may possess a power for harm of which he is not aware, but which he certainly should be on his guard against in view of a distressing accident which befel a golfer a short while ago. The pathological circumstances of the case are briefly noted in our columns to-day by Mr. Walter H. Jessop, ophthalmic surgeon to St. Bartholomew's Hospital, while the victim of the accident has also told us the story. Some curiosity having been expressed as to the composition a certain ball in his presence a serious attempt to satisfy

this was begun by stripping the ball of its cover and of its tight rubber bandaging beneath. All went well until the inner liquid core was apparently pierced in the endeavour probably to get rapidly at the mystery of the centre. There was suddenly set free a semi-fluid mass which came out with such force as to be projected on the ceiling. Unfortunately some of this mass struck the dissector sharply in the eye, which resulted in a serious injury, the surgeon to whom the patient came at first believing that irreparable mischief had been done, with a prospect possibly of the power of sight being for ever destroyed. We are glad to learn, however, that the outlook is since more favourable, and that eventually the sight and the injured tissue may be restored. The possibility of a golf ball behaving thus may not be generally known, and in ordinary circumstances would never be discovered, but nevertheless some protection is needed, we think, against this concealed danger. In the present instance it was curiosity as to the structure of the ball which led to the accident. The fate of a golf ball no longer good for golf, perhaps because it has lost its true shape or because it has become freely hacked, is likely enough to be the unwinding of its ingeniously wound rubber binding. The ball is, of course, not sold for this purpose, but there are directions now in which the good resilient qualities of the very superior rubber used in a golf ball can be turned to good account and the discarded ball may be selected as a source of this material. It ought to be known that the attempt to recover rubber in this way may be followed with disaster, and we consider that some warning should be issued with those golf balls which contain an inner liquid core of caustic consistency, subject to the considerable pressure of its tight elastic envelope. As it is, no such warning is issued, though there may exist in the ball all the potentialities of a bomb if it is not carefully handled. Some experiments which we have made with such a ball show that the pressure exists only so long as the liquid core is held tight in the grip of its tense rubber binding. At this stage, if the liquid core is pricked by a sharp instrument, the contents are ejected with great

force. If, however, the elastic binding is gradually released or unwound, the liquid core, we find, is disclosed at its full size, having had its pressure gradually relaxed, and the little bag of fluid is then practically incapable of discharging its contents. The bag of fluid, in our examination of balls of similar make to the one with which the accident occurred, consists of a little rubber bottle or flask containing a semifluid mass of soft soap or potash soap. The rubber bottle is closed at its neck by means of tightly bound string. Leakage is possible at this point, so that the contents may be discharged without the intervention of a sharp instrument. The potash soap we examined was very strongly alkaline, and no doubt would act as a corrosive in much the same way as free caustic alkali. Most people are aware of the exquisite pain which even soap made for toilet purposes gives when inadvertently the lather gets into the eye. When this happens with a strong, coarse alkaline potash soap used for common scouring purposes it may easily be imagined how intensified the action can be. But in the instance quoted the potash soap was also a projectile which came into contact with the sensitive tissue of the eye with great force. We think that makers of suet balls should issue a caution in regard to the dangers of the liquid core existing under the great pressure of the tight rubber folds. For the sake of children who may get possession of old golf balls, we think that it should be widely known that to experiment with the structure of certain varieties is attended with grave risks.—*The Lancet*, July 18, 1914.

Rontgen Determination of Certain Renal and Ureteric Variations and Disorders.

Percy Brown emphasizes the importance of collaboration between surgeon, cystoscopist, and rontgenologist in the examination of the urinary tract. Delineation of the urinary tract beyond the contour of the renal substance is impossible in health by virtue of tissue consistence, so the aid of art is necessary to reveal the outlines of pelvis and ureter *in situ*. The opaque substance introduced to facilitate the delineation must be present in such amount as to portray pelvis and ureter free from the influence of distention. Patients differ in degree of physical sensibility and it is easy to overdistend even the remote calices. Any one of three methods may be employed; colloidal injection, the radiographic catheter, and the intraluminal insertion of foreign material of high atomic weight. Each method has its faults. Colloidal silver under undue pressure causes inaccurate interpretation; the modern radiographic catheter is an improvement over its predecessors, but even a delicate catheter may force a ureter into a false position and obliterate a kink; leaden fuse wire either possesses the fault of the catheter if too coarse, or is difficult to introduce and to extract if too fine. The writer feels that if the individual excellencies of catheter and fuse wire can be properly combined, the combination will prove ideal. He also says that the Rontgen examination of a renal or ureteric situation is incomplete when it does not end by portraying, for the sake of the urologist and the patient, the simultaneous delineation of both kidneys and their immediate appendages. The same may be said with regard to the lower ureteric and vesical regions. On account of the distortion engendered, it is unsatisfactory to attempt to reveal the entire urinary tract at one examination, unless the patient happens to be of unusually diminutive stature.—*New York Medical Journal*, September 19, 1914.

The School of Tropical Medicine, Calcutta.

In February last, as recorded in an illustrated article in the *Journal* of March 7th, the foundation stone of the new laboratories of the Calcutta School of Tropical Medicine was laid by Lord Carmichael, the Governor of Bengal, and messages of sympathy and approval were read from the Viceroy and high officials of the Government of India. Within a few weeks a sensational article was published in a Calcutta paper to the effect that the Governments concerned were unwilling to provide the whole-time staff asked for by Lieutenant-Colonel (now Sir Leonard) Rogers, who has been so closely identified with the whole scheme, and that the resignation of that officer was feared. The Bengal Government promptly contradicted this report. It issued a statement to the effect that there was no truth in the rumours regarding Colonel Rogers's resignation, nor was there any difference of opinion between him and the Government of Bengal regarding the employment of Indian Medical Service officers in the 'Tropical School'; that the question of the necessary staff was under consideration; that Colonel Rogers was being fully consulted in the matter; and that the probable delay in opening the school was due to considerable difficulties which had to be overcome in obtaining a fair foundation for the new building. We are now glad to learn that the Bengal Government has submitted to the Government of India proposals for supplying a distinguished whole time staff for the school. When these proposals have been accepted by the Government of India only financial questions will remain, which, it is hoped, will be settled without much difficulty. Moreover, the Government of India has already addressed a letter to all the local Governments, setting out the courses of instruction in the school, and stating that it will be opened very soon after the new buildings are completed. The difficulties with the foundations have been overcome; two out of the three stories have already been constructed, and the arrangements for supplying the fittings and apparatus are far advanced. What really prevented the opening of the school in October next, as originally contemplated, was the necessity of preparing entirely new plans

and estimates as late as November last, owing to a portion of the site which the former plans were designed to cover having been required by the Improvement Trust for the new central road of Calcutta. This left only nine months for building and equipping the school, while the foundation difficulties reduced still further even this short period. It is now expected that the school will be ready to be opened for a three months course for assistant surgeons on June 15th, 1915, and be in full working order for the six months' post-graduate course for the diploma in tropical medicine commencing on October 15th, 1915. The Government of Bengal has also acquired a site continuous with that of the new laboratories for the special hospital for tropical diseases, which will enable the research work to be organized on the lines of the very successful Rockefeller Institute of New York, and much of the money for building the hospital has already been obtained in response to the appeal issued by Sir Leonard Rogers last February. Considerable annual contributions for the endowment of research work have also been promised. All that is now required to ensure the success of this great scheme is the sanction of the Government for the staff asked for, and a substantial annual grant from Imperial revenues towards the cost of upkeep. Such a grant is fully justified by the fact that the whole of India, far beyond Bengal, will be benefited both by the teaching and researches of the new institution. In view of the encouraging messages of the Viceroy, and Sir Harcourt Butler, the Member for Education on the Governor-General's council, and the sympathetic speech of Sir Pardey Lukis at the foundation stone ceremony, this essential and crowning help may reasonably be expected from the Government of India. It was indeed with that Government that the proposal "to establish a fully equipped school of tropical medicine in Calcutta, with a special staff of its own," originated in 1910.—The *British Medical Journal*, July 25, 1914.

Quadruplets.

P. Holst (*Tidsskrift for den Norske Lægeforening*, April 1st, 1914) was summoned to a 4-para, aged 38, whose previous confinements had apparently been normal. He found a small live female infant, which the midwife said had been born before her arrival after a breech presentation. For several hours after this birth there had been no labour pains, and the patient felt relatively well. On examination a head presentation was discovered, a fetal murmur was audible over the umbilicus, and so many large and small prominences could be felt through the abdominal wall that triplets were diagnosed. Glanduitrin was injected, but it only induced cramp-like pain, which lasted half an hour and did not advance labour. Forceps were therefore applied, and a dead female infant was delivered. There were still no labour pains. A hand was therefore introduced, a leg seized, version performed, and a living male infant delivered, with arms above the head. As no pains had occurred half an hour after this birth an attempt was made to express the placenta. The first result of this was the presentation of a tense bag of membranes which protruded far beyond the external genitals. It was ruptured, and immediately afterwards, while pressure was maintained over the fundus, a dead male infant was shot on to the floor like a ball from a cannon. It was accompanied by some liquor and quickly followed by a placenta with a double amnion and the two male infants' funiculi, the insertion of which was marginal. Directly afterwards the second placenta with one amnion and two centrally inserted funiculi, belonging to the female infants, was expelled. There was no excessive haemorrhage, and the puerperium was normal. The four infants were of the same size; the two dead infants each weighed 1·5 kilos and measured 33 cm. in length. No. 1 died 10 days old; No. 3, though not showing much vitality at first, was still alive at the age of 6 months, and has an excellent chance of survival. Both parents were pure-bred Lapps.—*The British Medical Journal*, July 25, 1914.

Infant Mortality.

Alan Brown and George Campbell review what is being done throughout the world to reduce infant mortality. The number of deaths in a thousand infants in the various countries gives an idea of how great mortality is. The mortality ranges in different countries from less than one in ten, to two, three, or even more in ten of the babies born. To reduce this mortality, they suggest first an absolute enforcement of the law requiring registration of births. Next they state that several things are essential to the successful operation of a milk depot. The work must be done by physicians, not by trained nurses or social workers. The physicians themselves must be properly trained for their task, and must be paid for it. The best results cannot be obtained by placing this responsibility on voluntary workers. The milk depot, unless properly conducted, by increasing the facilities for artificial feeding, may tend to discourage maternal nursing and possibly increase infant mortality. While the distribution of clean, pure milk is important, it should be realized that the instruction of the mother and continuous observation of the child play a larger part. Everything possible should be done to encourage breast feeding and to aid it. The inexperienced mother is thus guided not by the advice of ignorant and superstitious relations or friends, but by an intelligent and experienced person who not only tells her what to do, but shows her how to do it. The expenses of conducting milk depots and consultations upon a large scale is so great that private philanthropy cannot be expected to bear it. They should be supported by the municipality. In this way standardization of methods, proper supervision, and co-operation may all be secured. A milk depot and visiting nurse should be available for every twenty thousand inhabitants.—*New York Medical Journal*, September 26, 1914.

Causes of Blindness in Children.

N. Bishop Harman classifies the causes of blindness in a series of 1,100 children into three groups: Injury or destruction of the cornea through surface inflammations; inflammation within the eyeball or optic nerve; congenital defects of the eyes. Surface inflammation involved the eyes of 351 children, and of this number no less than 266 had ophthalmia neonatorum, giving a proportion for this disease of twenty-four per cent. of the total cases of blindness. Only forty-seven cases were due to purulent conjunctivitis of later years, and thirty-eight to phlyctenular keratitis. Syphilis was the cause of 190 cases of interstitial keratitis, of 126 cases of disseminated choroiditis or other blinding lesion of the posterior half of the eyeball, and of sixteen cases of congenital blindness. Syphilis, therefore, accounted for a total of 343 cases of blindness, or 31.7 per cent. of the whole 1,100 cases, or of considerably more than were due to gonorrheal infection. This is in part the result of the recent more or less general use of some prophylactic agent in the eyes of the newborn to prevent gonococcic infection. Since 1904 the figures show that there has been a definite reduction in the proportion of cases of blindness due to the gonococcus while the proportion due to syphilis has risen. This rise is attributable mainly to two factors; the reduction in cases due to ophthalmia neonatorum and a greater accuracy in the diagnosis of syphilis, and there is no evidence in the statistics to warrant the conclusion that hereditary syphilis is increasing. The grand result of this examination of causes of blindness, says Harman, is that more than one half of the children owe their miserable state to venereal disease in their parents.—*New York Medical Journal*, September 26, 1914.

Gleanings from Contemporary Literature.

HEREDITARY SYPHILIS IN CHILDREN : ITS RECOGNITION.

HEREDITARY SYPHILIS : ITS CUTANEOUS EVIDENCES.

JAMES MACFARLANE WINFIELD, M. D.

If both the man and the woman are profoundly syphilitic, in the active secondary stage, impregnation under this condition generally terminates in abortion, the skin of the fœtus showing evidences of the luetic infection in the shape of macerated shreds and the remains of bullæ.

Should both the father and mother be the victims of syphilis at a more remote stage, the pregnancy may go to term, or miscarriage take place at the seventh or eighth month. The skin of the child will be the site of a papulo-bullous eruption.

If the disease of the parents be still more remote, or if the father alone be luetic, the child is born at term, but the skin is either yellow, wrinkled or there may be a beginning polymorphous eruption consisting of papules over the body and bullæ of the palms and soles ; or the child may appear perfectly normal, developing the characteristic cutaneous lesions any time from the fifth day to the third month.

The majority of cases, seventy-seven per cent, show the eruption during the first month, diminishing in frequency up to the third month.

In some instances the first evidence of the cutaneous eruption is the formation of bullæ on the hands and soles: Often a premonitory evidence is a peculiar dusky violet hue of the skin covering these locations ; this color may be observed at birth and is pathognomonic of subsequent luetic bullæ : coincident with the blisters, a more or less generalized eruption appears over the body, consisting of macules and papules, which later may develop into moist papules, scaly eczematous-like patches, or furuncles. In many respects the polymorphous eruption resembles that of acquired syphilis. The size of the lesions ranges from a lenticular spot to some a centimeter in diameter. The moist papules are found about the buttocks, in the ano-genital region, the axillæ, the interdigital spaces and face, although, in severe cases, the whole cutaneous

surface may be covered with the moist patches; the color of the patch is a dusky-red or violaceous, and there is puriform sticky secretion. The moist papules about the anus and genitals, or in places where there is considerable heat and moisture, often develop into condylomata.

Fissures develop about the commissures of the lip, and in other parts of the body, as for instance, between the toes and fingers; the fissure is deeply indurated, and if the child survives, lasting scars may remain. The vesicular syphiloderm is the rarest type of eruption seen in inherited lues, and when it does occur it is most frequently seen about the lips appearing as conical blisters which rupture, leaving an incrustated patch, the base of which is of the same characteristic violaceous hue that is so common in inherited syphilis.

The more closely the eruption adheres to the vesiculo-bullous type the more fatal the disease, such children seldom, if ever, surviving in spite of the most energetic treatment.

The condylomata may persist long after the other cutaneous evidences of the disease have subsided, and even after the child has gained in weight,

The nails and hair generally are affected in the same degree as is the skin, the unguinal and periunguinal inflammation often leading to complete loss of the nails.

The effect of syphilis may be observed in the hair at birth; there may be complete alopecia or marked thinness, or the luetic infant may have an unusually thick crop of hair, the so-called "syphilitic mop or wig." This abundant crop soon falls out. The hair is particularly liable to fall off from the sides and back of the scalp, the process continuing until there is relatively complete alopecia.

The late cutaneous evidences of inherited lues are similar to those seen when the disease has been acquired later in life, consisting of gummatous infiltrations and cutaneous ulcerations.

These are the more important symptoms and evidences, but there being so many papers in this symposium, and the time for each being limited, there is no opportunity for elaboration. In concluding allow me to call attention to some points in differential diagnosis.

If the exanthemata, particularly measles, are excluded the only skin diseases that are likely to be mistaken for syphilis are the

so-called pemphigus neonatorum, simple erythema, impetigo and seborrheic dermatitis.

In arriving at a correct differential diagnosis several cardinal points must be remembered.

First, the age of the child.—Syphilitic eruptions appear before the fourth month of life ; if an eruption develops after that time it is certain to be of non-syphilitic origin.

Second.—The color of the eruption ; that of syphilis is dusky red, coppery or violaceous. Nun-luetic rashes are bright red—erythematous.

Third.—In the vast majority of cases the cutaneous manifestation is preceded by, or accompanies a coryza, and the cry has a peculiar characteristic sound.

Fourth.—It is in most instances possible to obtain some evidence or history of syphilis on the part of the parents.

Fifth.—Most important of all, the Wassermann test. If there is any doubt regarding what the skin eruption is, it is the duty of the physician to aid his diagnosis serialogically. If the infant is syphilitic the Wassermann will be positive.

Sixth.—If the secretion from the exudating patches is examined the spirochæte will be found if the eruption is luetic.

Pemphigus neonatorum, impetigo contagiosa, is a disease of pyogenic origin, and close questioning will elicit the fact that some other member of the family who has come in contact with the baby had either a whitlow or impetigo.

In making a diagnosis between bullous syphilis and pemphigus neonatorum it should be remembered that the bullous syphiloderm is accompanied by an eruption of a dark red violaceous color, while the blister of pemphigus is bright red, tense and filled with a clear fluid which becomes cloudy from the invasion of pus organisms.

Syphilitic blebs as a rule first appear on the palms, soles and about the buttocks ; those of pemphigus may be anywhere, but seldom on the palms and practically never on the soles. Antiseptic treatment will cure pemphigus, but has no effect upon the syphilitic lesion, the disease progressing until the infant wastes away, unless constitutional treatment is instituted.

Simple erythema is bright red in color and occurs about the convex surfaces of the buttocks, the inner and posterior parts of

the thighs and genitals, spreading to the calves, heels, shoulders and elbows. In fact simple erythema may be present at any point where there is friction from the clothing.

With simple erythema there is no other eruption suggestive of syphilis, and the bright red erythematous patch tends to vary in intensity from day to day. If the child is badly nourished and its personal hygiene has been neglected, these simple erythematous patches may become papulo-ulcerative, closely resembling the moist papule of syphilis; here again the color of the eruption must be considered, as well as its location. The general appearance and history of the child are suggestive and if the diagnosis is still in doubt a Wassermann test of the blood or bacteriological examinations of the discharges can be made for the spirochæte, pus organisms and the colon bacillus.

Impetiginous eczema, in contra-distinction from erythema, occurs particularly in the flexures, as well as the area that is covered with a napkin; the disease surface is bright red, excoriated and moist, and around the margins the epidermis is raised and filled with turbid serum, while many of the excoriated patches are covered with impetiginous crusts.

Soborrhæic dermatitis is located similarly to the impetigo, but instead of presenting glazed raw areas it is covered with greasy scales: very often the eruption is also present about the axillæ, scalp, cheeks and nose.

HEREDITARY SYPHILIS: THE LYMPHATIC AND CARDIO-VASCULAR SYSTEMS.

HENRY N. READ, M.D.

The lymphatic glands are always involved in congenital syphilis, though they may not attain the large size seen in tuberculosis and some of the blood dyscrasias. This polyadenitis is generally, but not always, seen during or soon after the eruption manifests itself in the very young. If the inguinal, axillary and cervical regions are examined in the syphilitic child it is not difficult to make out the enlargement of the glands in these locations: but it is of more importance for diagnostic purposes to demonstrate the enlargement of glands in those situations in which normally we find no enlargement. Such are the glands in the fourth and fifth intercostal spaces, along the sides of the thorax and the epitrochlear glands, some authorities maintaining that persistent enlargement of these glands, is only found in

syphilis. It is doubtless strong presumptive evidence. The enlargement of the glands in syphilis is not very great, generally about the size of a bean. Sometimes when associated with ulcerations of the skin or condylomata we have suppuration and stoughs, leaving unsightly scars, but these abscesses are very amenable to specific treatment, contrary to those made by the tubercular glands. The radial scars found around the mouth and nates are very significant, the former being considered absolute proof of hereditary syphilis by Hochsinger.

A very cursory glance only can be taken of this important subject in the time allowed tonight. Pathological changes in the cardiac ganglia are found in congenital syphilis, and also serious changes in the myocardium itself, and in the coronary arteries, Aneurysms in young children are almost always due to hereditary syphilis, unless traumatic. Inflammation of the lining membrane of the large blood vessels, including aortitis, is not uncommon in hereditary syphilis, and also endocarditis. Sclerosis of the peripheral arteries in the very young comes almost exclusively from syphilis. Inflammation and dystrophy of the veins from this cause too have been observed by Marfan, Fournier and others. That tertiary syphilis affects the heart and blood vessels to a very large extent in adult life is held by many of the best observers, far more so than was formerly thought. The increasing number of reported cases, and the large amount of literature of late years on obscure diseases and deaths in cardio-vascular diseases, would seem to support the idea that many of these cases are really due to the end changes of syphilis. So much so is this the case that many syphilographers advise that the Wassermann test be made in all heart cases as an aid to the diagnosis. That the spirochætes have a peculiar affinity for the cardio-vascular system is well known, and congenital syphilis being a tertiary manifestation generally, we expect to find and do find many of the lesions found in this system in the adult, in the infant and young child.

HEREDITARY SYPHILIS : IN BONES AND JOINTS.

WALTER TRYSLLOW, M.D.

Syphilis may present lesions in bones and joints in both the hereditary and the acquired form. In the acquired form it is usually a tertiary (rarely a secondary) manifestation ; and for sociological reasons, is but seldom found in children. The lesion may attack any histological structure of bone—cortex, medullary

substance or periosteum—but seems to have a predilection for periosteum and especially in children, for the epiphyseal lines. It may also attack articular bone surfaces, cartilage and synovial membrane, but this last is rare, and indeed, the joint structures proper are not as frequently attacked as the bone.

As distinguished from tuberculosis (which has a greater tendency to attack joint structures), and from osteomyelitis (which tends to attack the medullary portion of long bones), syphilis is much more apt to manifest itself in several locations—that is, bone and joint tuberculosis and osteomyelitis each present at single locations, multiple involvement being only a very late condition; syphilis on the other hand tends to manifestation in several localities.

Differential diagnosis.—The history of the case must play an important part here. Sometimes the medicinal test—the so-called mixed treatment in the case of suspected syphilis—alone clears away this difficult problem. The positive Wassermann test has at times, in the writer's experience, been of great value.

The symptoms are not striking. There may be gradual emaciation and the general appearance of a patient with wasting disease, but this is rarely as marked as in tubercular joint lesions. Locally, joints become swollen, more painful and with more redness than in tubercular joints. The osteocopic pain is characteristic. It comes in long bones, especially the tibia, after the patient is warm in bed, and is described as a dull "rheumatic" ache. Joints become limited in action. If there is a discharge, it may be thinner than that of tuberculosis and it tends to fictitious healing under irregular dirty scabs, which when taken away reveal collected gummatous matter. The teeth show a characteristic notching on their approximating borders.

Treatment is medical and mechanical, but rarely if ever operative.

To sum up.—Syphilis attacks bones and joints in children; the differential diagnosis from tuberculosis, from osteomyelitis and from other bone and joint lesions is often difficult; syphilis has a greater tendency to multiple manifestation than other diseases; family history, personal history and the medicinal test must still be important factors in diagnosis; symptoms are not very characteristic, but attention is called to the osteocopic pain in long bones and to Hutchinson's teeth.

HEREDITARY SYPHILIS : THE EAR.

J. E. SHEPPARD, M. D.

Of the aural manifestations of hereditary syphilis in children there is relatively little to say. The part of the ear involved is in practically all cases the internal ear, and as a necessary result of this the symptoms are subjective rather than objective. Furthermore, the symptoms are simply those of internal ear disease in general, and, considered apart from any history of heredity, or other syphilitic manifestation, or the results of a Wassermann, or other specific reaction, are not pathognomonic of a syphilitic affection of the auditory nerve structures.

The symptoms which indicate an affection of the internal ear are deafness more or less sudden in its onset, more often than not accompanied by tinnitus and vertigo in varying degrees, and occasionally by nausea or even vomiting. In addition to these we have the information gained from our functional tuning fork tests, internal ear trouble being indicated by, 1. Lowering of the limit of hearing for high tones; 2. Hearing for low tones relatively well maintained, with very little elevation of the low-tone limit; and 3. The absolute duration of both air conduction and bone-conduction reduced as compared with the normal, bone-conduction rather more than air-conduction, but the normal ratio of air-conduction to bone-conduction, of about two to one fairly well maintained.

There are two periods of childhood when hereditary syphilis seems more prone to affect the ears, viz., from about four to six years of age, and again in the neighborhood of puberty; and at this latter age, for some reason unknown to us, girls are much more often affected than boys. At this later period of course we can get some information of value from our tuning-forks, but not in younger children. In them, given a drum membrane so nearly normal as not to indicate middle ear trouble, and a more or less profound deafness which has developed rather suddenly than gradually, whether or not we are able to elicit the presence of tinnitus and vertigo, either now or at the onset of the deafness, and we have quite sufficient to direct our attention to the internal ear, and, with or without a definite family history, but with a positive Wassermann reaction, a diagnosis of hereditary syphilis affecting the auditory nerve apparatus. I might add that as a rule this is a bilateral affection, with almost always an absolutely bad prognosis as regards the hearing.

HEREDITARY SYPHILIS : THE NOSE AND THROAT.

CLAUDE G. CRANE, M.D.

Congenital syphilis of the nose and throat may appear in the secondary or tertiary form. The secondary form may be present at birth, or may be delayed as late as the sixth month. The tertiary may follow the secondary immediately, but the condition is often not recognized until the fifth or sixth year. There may be no evidence before the second dentition or puberty. The very late manifestations belong, of course, to adult life.

In the nose we may have the secondary form, known as "the snuffles." This is the most common lesion of congenital syphilis in the nose and throat. It may be present at birth, or not appear until the third or sixth week. It is a serous or sero-purulent inflammation involving the mucous membrane of the nasal fossæ, due to syphilitic infection. It is at times preceded by an inflammation involving the post nares, with a discharge into the nasopharynx. We frequently have fissures of the anterior nares, which when they contract, following healing, result in a very small opening of the anterior nares. The white radiating scars from the anterior nares are very characteristic. If the infection progresses beyond this stage, we may have a localized superficial necrosis of the mucous membrane forming a mucous patch.

In the tertiary state we may have an ulcer which may cause a perforation of the cartilaginous septum. The septum is most frequently the seat of the specific lesion, the turbinates not being so often involved. The gumma also belongs to the tertiary stage, and also involves the septum. Breaking down of the gummata may result in the partial, or complete destruction of the septum. The resulting scar contraction causes the saddle-shaped nose with the turned up tip.

The perforation of the hard palate does not often occur in childhood. The atrophic type of rhinitis is probably a result of a syphilitic infection in the nose in infancy.

In the fauces and pharynx the secondary stage shows itself as an erythema or mucous patches. In the tertiary stage we have usually a diffuse gumma with ulceration and destruction of the soft palate. The resulting scar formation and contraction produces marked malformation of the pillars of the fauces, the soft palate and pharynx. Sometimes a complete occlusion occurs due to the

formation of a dense mass of scar tissue between the soft palate and the posterior pharyngeal wall.

The larynx is less frequently involved in congenital syphilis than the nose, fauces and pharynx. Within the first few months of life we may have a perichondritis of the laryngeal cartilages, or, in the tertiary stages, ulceration. Gumma of the larynx does not belong to childhood.

With the foregoing manifestations of congenital syphilis we have the symptoms which are due to the disease itself and those resulting from the local lesions. The nasal obstruction produces its characteristic symptoms, and the atrophic rhinitis the symptoms with which we are all familiar. The malformation and destruction of tissue in the fauces and pharynx, as well as the lesion in the larynx itself, causes at times marked changes in the voice.

The importance of early diagnosis of congenital syphilis of the nose and throat cannot be too strongly emphasized. Every physician who has to do with children should familiarize himself with the early manifestations of the disease in the nose and throat, as it oftentimes gives us the first clue to congenital syphilis.

HEREDITARY SYPHILIS: RELIABILITY OF THE WASSERMANN REACTION.

JOSHUA M. VAN COTT, M.D.

In general the results of the Wassermann reaction in congenital lues scarcely differ from those in acquired syphilis. Children who at first show any sort of luetic symptoms always give a Wassermann reaction. They differ from those acquiring the disease by their persistent resistance to treatment. In these cases changes are very frequently shown in the spinal fluid.

Comparative tests on mother and child, both of whom show clinical symptoms, give several combinations. Both may be positive or both negative, one may be positive and the other negative, or vice versa.

Knopfehnacher & Leindorf get a positive Wassermann reaction in 50 per cent of the mothers who give birth to syphilitic children.

Friedland, on the other hand, found a positive reaction in every such mother. Thomas and Boas say that a positive reaction in the mother gives a sure expectancy of a syphilitic child. Although a

child may give a negative result immediately after birth, the reaction may later become positive.

According to Leavy (with Wassermann) almost without exception, both mother and child give a positive reaction. In these cases (and in the Munich Clinic, Busch) the mother showed symptoms of lues in only a small number.

On the ground of serodiagnostic experience it can be said that lues is not directly transmitted from sperma to ovum, but, like all other infectious diseases from an already infected mother, by way of placental circulation. In other words, there can be no congenital lues in a child without a similar latent condition in the mother.

The later manifestations of hereditary lues are keratitis parenchymatosa, disturbances in hearing, bone changes and disturbances in brain development. In keratitis parenchymatosa the reaction is always positive. In deafness and bone changes one finds frequently a negative reaction, probably due to the long period which has elapsed since the disappearance of florid symptoms.

In idiots a large percentage give a positive reaction, some in the serum, some in the spinal fluid.

HEREDITARY SYPHILIS : ITS DIAGNOSIS IN INFANTS AND CHILDREN.

ELIAS H. BARTLEY, M.D.

Acquired syphilis is so rare in infancy and early childhood, and the clinical picture is so like that seen in adults, that we may pass it by with a mere reference.

The congenital form is the syphilis of early life. The diagnosis of congenital syphilis in infants rests upon three lines of inquiry :

1. The history of the parents, including the history of the mother's previous conceptions.
2. The symptoms found in the child.
3. The serum reaction of the mother, or of the child itself.

A positive history of syphilis, in either parent is proof of hereditary syphilis in the child, although it may show no symptoms of the disease. A history of repeated abortions, usually coming late in the period of utero-gestation with each succeeding pregnancy, until a living, poorly-nourished infant, or even a normal appearing baby is born is typical of syphilis in the parent or parents. The severity of the infection in the infant is usually proportional to the activity

of the syphilitic process in the parent or parents at the time of conception.

As the disease in the parents becomes quiescent as the result of treatment, or with the lapse of time, abortions may cease and an apparently healthy child may be born of syphilitic parents. This is especially true if the mother is kept under treatment during the greater part of the time of her pregnancy.

The symptoms of the disease in the child may appear early ; i. e., within the first month or six weeks of life, or as late as the fifth to the fifteenth year, or even later.

The symptoms which appear early resemble the secondary symptoms of acquired syphilis. That is, they are those which affect the nutrition, the mucous membranes and skin, with enlargement of the spleen and liver.

Those which appear later in life resemble the tertiary symptoms of acquired syphilis.

One of the earliest symptoms, and one rarely absent, is rhinitis, or "snuffles." There is redness and swelling of the mucous membrane of the nose with a very irritating, profuse, muco-purulent discharge, frequently tinged with blood, which irritates the skin of the upper lip. Crusts form in the nose, which retain the discharge, leading to deeper inflammation of the membrane and often to ulceration extending to the cartilages or bones, and causing perforation of the septum or deformities. There is also a moderate degree of hoarseness of the voice.

The rashes on the skin are characterized by their great variety. Almost every variety of eruption is seen, such as the usual maculæ, the caculopapules, pustules, ulcerations, scaly eruptions, smooth simple redness, bullous eruption or pemphigus, etc. In most cases, however, the eruption at its beginning has a fairly characteristic appearance. It appears as round, discrete, rose-red macules, with healthy skin between the spots, which later become copper-red in color.

The rash is most likely to appear first on the buttocks, legs and lower abdomen. This is by no means the absolute rule. It may appear over the whole body and face.

When the rash is especially prominent around the buttocks it may ulcerate and form condylomata. On the palms of the hands and soles of the feet it is attended with the formation of bullæ, or

with profuse desquamation. In either case the skin becomes smooth, glazed and copper-red in color. This appearance of the skin in these locations is very characteristic, and is seldom met with in any other condition. Radial fissures frequently occur about the angles of the mouth, the eyes, the anus or vulva, which are very difficult to heal. Mucous patches in the mouth or vulva are sometimes seen. The nails are frequently distorted or there is inflammation of the matrix, giving rise to onychia, bird-claw nails, ect. The bones of the proximal phalanges of one or more fingers are not rarely enlarged, giving a fusiform swelling which is difficult to distinguish from the similar dactylitis met with in tuberculous children. Sometimes an acute epiphysitis of the long bones with swelling and tenderness near the joints, similar to that seen in scorbutus, is met with.

Malnutrition is a constant result of the more marked cases, as of all those which show active symptoms of syphilis, and this often presents some difficulty in the differential diagnosis between syphilis, atrophy or marasmus and tuberculosis. We must often resort to the other symptoms here mentioned to differentiate these cases from the other forms of marasmus. Owing to this malnutrition the infant does not thrive as it should, its skin is sallow and wrinkled, and the teeth are delayed and readily decay after their eruption.

The spleen is regularly enlarged and is palpable below the margin of the ribs.

The enlargement is sometimes very great.

The liver is only moderately enlarged.

The diagnosis of syphilis in older children is attended with more difficulty than in early life.

Hutchinson, long ago, called attention to three symptoms which he regarded as very important aids in the diagnosis of syphilis in older children. These were: First, the crescentic notching of the upper central incisors of the permanent teeth; second, the frequent occurrence of interstitial keratitis with iritis and corneal opacities; third, sudden deafness not due to disease of the middle ear.

We may add to those periostitis of some of the long bones, especially of the tibia, ulna, or radius, destructive ulcerations of

the bones of the nose, or of the palate, and enlarged glands and enlargement of the spleen.

The enlargement of the epitroclear glands is regarded as highly diagnostic by some and of questional value by others; but when taken with the other symptoms here enumerated it has considerable diagnostic value.

While more or less retarded growth and development are shown by syphilitic children who show active symptoms before puberty, these symptoms are not evident in those children born of syphilitic parents who do not show active symptoms of the disease.

The blood in congenital syphilis usually shows a rather marked secondary anemia. In cases with a severe rash there may be a mild grade of eosinophilia, which diminishes as the rash improves. *Serum reaction.* The Wassermann-Neisser Bruck reaction is now regarded as the most decisive test for syphilis. A discussion of the technique of this test would be out of place here. As it is now believed that every mother who bears a syphilitic child is herself syphilitic, it is often best to test the mother where the disease is suspected in her infant. The necessary amount of blood can usually be more easily obtained from her than from a small infant. When applied to the serum of the child it is said to be positive in 98 per cent of cases of congenital syphilis.

This test, unfortunately, requires about 10 c. c. of blood, which is a large amount to draw from many weakly babies. The Noguchi modification can be done on as small an amount as 1 or 2 c. c. of blood, and is therefore more manageable in young infants, but is regarded by most pathologists as less satisfactory than the original form of the test.

The luetin test of Noguchi is much simpler and can be done by any one, even if not accustomed to the more complicated laboratory tests. It consists in injecting into the skin an emulsion of the killed *treponema pallidum* organisms, when a positive reaction is shown by an indurated papule at the site of the injection within twenty-four to forty-eight hours, surrounded by a diffuse zone of redness. Occasionally the papule forms a pustule and at times the above reaction is delayed until a week. The reaction is apparently

specific for syphilis, and is said to be positive in hereditary syphilis in from 90 to 100 per cent of cases. It seems to be especially reliable in the latent cases, and seems to outlast the Wassermann reaction in cases under treatment. If these claims are borne out by further experience, it will replace the more complicated serum reaction.

DR. MURRAY B. GORDON, in discussion, said :—"There is one thing to which I wish to call attention, especially to pediatricists, and that is that the luetin test is of more importance, especially in dispensary work, than the Wassermann reaction, because in dispensary work one cannot get enough blood from patients who are only a few months old up to, say, five to six years old, to treat the blood for the Wassermann ; but if we use the luetin test we have something that has been proven to be reliable, almost as reliable as the Wassermann reaction.

"At the Polhemus Clinic we have been using the luetin test for the past year as well as at the Home for Consumptives and have obtained very good results.

"The luetin test was originated by Dr. Noguchi. It is an emulsion of dead spirochæte. We use intradermal injections and 7/100 c. c. are injected into the skin of the child.

"During the past month or so we have been startled by some 'yellow' newspapers telling us that the injection of luetin has caused syphilis in certain of the city hospitals. In the seventy-five cases which I have done I haven't seen any bad results. We haven't given syphilis to anybody. I think that the men who are doing more work with children than any other class of patients should look into the question of the luetin test. We find that it is just as important to try the luetin test as the Wassermann reaction, especially in dispensary work where people won't allow us to take 10 c. c. from a vein or from any other part of the body. We have been working on this at the Polhemus and will probably publish a paper on it, but I wished to bring it to the attention of the Society.

DR. WILLIAM M. HUTCHINSON asked the details.

DR. Gordon continued :—"The emulsion is prepared by Dr. Noguchi, and I think that he is willing to give it to any body

who wants to try it. It is an emulsion of dead spirochæte. The syringe used is the old-fashioned tuberculin syringe of 1 c. c., and an equal amount of normal saline solution and luetin are taken up in the syringe and 7/100 of a c. c. are injected into the skin so that a small bleb is formed. The skin is prepared by washing with alcohol.

"The doctor when he first tried it out used a control on the other arm and this control was a plain normal saline solution, but after one becomes accustomed to the reaction the control is no longer necessary,

"Now as to the reaction: in about twenty-four to forty-eight hours a small papule is formed at the site of the bleb and this papule in some cases becomes purulent in a few days and then goes on in this purulent form and subsides in a few weeks to a macule which may persist for months and months. In some cases we noticed it for eight months. If the reaction is negative nothing at all is seen at the site of the injection.

"The luetin test persists with anti-syphilitic treatment, while the Wassermann does not."—*The Long Island Medical Journal*, August, 1914.

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PUTTING AWAY CHILDISH THINGS.

By DEWITT G. WILCOX, M.D.

(Continued from p. 468).

This leads me to speak of that other insidious but malevolent tendency of the profession—the fee-splitting or commission-paying custom. The reaction against the form of commercialism has already set in and is so strong and universal that the custom must soon be abolished. There is no argument which can be offered that will in the least justify a specialist in paying to another physician a fee for sending him a patient. There is equally no argument which will justify a physician in receiving a fee in any form for so referring a patient. It cannot be done with safety under any kind of a disguise, and if we have our doubts on this subject just put the matter to the crucial test of publicity. If it were generally known that such methods were in vogue, the condemnation brought down upon us even by a commercialized public, would be equal to that brought down upon the business doctor who removed the stitches. This tendency to pay and receive commissions is twofold in origin, both destructive to the high ideals of professionalism; first, cowardice on the part of the family physician who fears to charge his patient a respectable

and justly-earned fee for his time and attention in taking the patient to the specialist and remaining by him during an operation; second (graft), if he has been of any service to the patient in thus attending him he should be paid for it, and the patient is the one to make payment. If he is of no service, then it is graft to accept payment from anybody.

When the family physician asks the surgeon to add five dollars or fifty dollars to his fee for the benefit of the former, he is prompted by one of two reasons: either he is afraid to make the charge openly, for fear of offending the patient, and is thereby a coward, or else he knows he does not deserve it, and so seeks to get it by graft. The instinct which prompts the surgeon to offer a fee, or to bribe the family physician for referring patients to him, is purely commercial, and it is most deadening to professional idealism. It is an instinct to build up by the power of the mighty dollar and not by high merit. A profession standing for high ideals and purporting to be humanitarian in character cannot long maintain its position before the public when such methods become known.

If we as a profession are not held in the high esteem of the public, which once we enjoyed, it is our own fault. While we must have money to live and practice our calling, we cannot afford to place the emphasis on the dollar instead of on professional merit. Because we have lowered our calling in emphasizing the commercial side, we have made the profession attractive to a class of young men who are entering our medical colleges for revenue only. Our medical colleges begin to look to them like a get-rich-quick-grist-mill.

We must not allow ourselves, or the oncoming generation of physicians, to lose sight of that worth-while reward which comes to every conscientious practitioner of medicine, that high order of genuine respect and love which patients instinctively give to him who sacrifices for the amelioration of their sufferings. I say it without fear of contradiction that there is no amount of riches which can give the real satisfaction or deep sense of happiness to the physician as that which comes

from the possession of a high order of respect and love from patients who have learned his genuine worth. I do not mean to say that physicians who have become well-to-do have not earned and do not possess this respect, for many do; but the physician who has placed the emphasis upon the dollar, and who has lost sight of the gratitude, is to be pitied rather than envied.

We have now considered our relation to the public and to the patient. Let us now consider something nearer home—our relation to ourselves. "Oh, wad some power the giftie gie us, to see oursel's as ithers see us." And we on good terms with ourselves! Time is too precious to waste any of it in this busy, work-a-day world in striving for useless or unattainable ends. We as a school of thereapeutic specialists, should get before us a clear-cut picture of the goal toward which we are working, and endeavor to select the best and shortest route thereto. We have long since settled the question that we are physicians in the broadest sense of the world, employing all approved methods of cure known to medical art. We are teaching all that in our medical colleges to the fullest degree, but we are teaching and practicing more; namely, a belief in and the practice and demonstration of cures effected by the use of attenuated drugs selected after a certain demonstrable law.

Right here I want to put the plain question to every one of you. "Is your belief in that law so well founded, so unshaken, and so earnest that you are willing to fight for it, to sacrifice and to go forth and achieve success for it?" When Gideon wanted to try out the stuff of which his volunteer army was composed, he subjected them to various tests which unconsciously showed the sort of timber entering into the makeup of each, and while in the end he greatly reduced his force by applying the test, yet he won victory because the remnant had confidence in themselves, faith in their cause, and a zeal that overrode all obstacles. If every physician in our Institute can stand such a test and will respond thereto, we

shall achieve success. If not, we had better quit right where we are and save a lot of precious time.

The next question to settle is, What do we as homœopathic physicians mean by success? Do we mean the undisturbed privilege and the opportunity to go on and practice our individual methods as we see fit; graduating such students as may come to our colleges, and obtaining such legislative measures as may tend to perpetuate our rights and privileges? Or do we mean all that and much more: namely, to make our objective mark the universal acceptance of homœopathy by all physicians as the recognized method of treating the sick when internal medicine is indicated? Which shall it be?

To me, the gaining of this first goal means such a limited and small measure of success that it carries with it little incentive for action. In fact, its basic thought is only selfishness. The latter appeals to me because of its scope, its difficulties; the demand for organized effort, and, withal, its splendid possible achievements. If there is the good in the homœopathic method of treating the sick which we all conscientiously believe there is (and that belief is based upon a hundred years of demonstrable proof), then we are morally bound as humanitarians to make every possible effort to give every man, woman and child in the world an opportunity to enjoy its beneficence. This can be done only by so educating and informing the public concerning the superiority of the homœopathic method that public opinion, that supreme court of last resort in all matters of public welfare, will demand that all physicians now practicing and those yet to practice shall inform themselves concerning it and then practice it. This is a great undertaking, but it is worth our while.

It seems to me that herein we should concentrate all of our efforts. The time was never more ripe than at present to go before the public with our cause. Nearly every new discovery of medicine has demonstrated the truthfulness of the law of homœopathy. Jenner foreshadowed its triumph; Pasteur and Lister advanced it; Koch demonstrated it; Von

Behring utilized it, and Wright acknowledged it. The opsonic index, the vaccine treatment of typhoid and other infectious diseases, radiotherapy, the establishment of immunity, and the power of infinitesimal doses of vaccines and serums as demonstrated by laboratory research in all schools and countries, all acclaim its truth. Only recently a Paris scientific journal dwelt extensively upon the fact that the poison of certain venomous serpents becomes more powerful the more it is diluted with water. Another laboratory man of world-wide note has asserted that there must be an invisible dynamic force in attenuated drugs.

The growing distrust, nay, even aversion of the better thinkers in the old school to the use of crude drugs in disease, focuses in the limelight the discarded methods of old school treatment. The most striking example is the late declaration of Sir James McKenzie in London, the distinguished internist of the old school who so scathingly condemned the unscientific method of his own school in the administration of drugs for disease. The doctrine of drugless therapy which the public has accepted, in part prepares it well for the new acceptance of attenuated drugs, when given by the hundred-year-old method of homœopathy.

All these things we must let the public know. We have been asleep; we have been too well satisfied with our individual successes. Our citadel has suffered while we have been cultivating our rich farms, and all the time the enemy has been encroaching upon us unseen.

In my trip through the Middle West last month, when I visited ten different State Societies, it was rather significant that in three separate instances after addressing mixed audiences of physicians and laymen upon the subject of homœopathy, representatives of the press come to me and said, "Doctor, what your cause needs is publicity. The public is with you in its belief in homœopathy, but it does not know enough about it. The present generation knows little about it. The public ought to know all the facts which you have given." In

talking with the wife of a prominent judge in Minneapolis, after the address, she said, "I used to hear a good deal about homœopathy when I was a young girl, but now I hear little of it." Then she asked if there were many homœopathic physicians in Minneapolis, and I replied, "About ten times as many as when you were a little girl." Her reply was, "Why don't they let us know they are alive?"

Our next question is, "How are we going to let the public know what homœopathy is, and what it is doing? The answer harks back to address of this morning: organization, federation, concentration. When we have our forces so federated that we can move with the solidarity of a regiment, then we can do anything that ten thousand intelligent, earnest, forceful men can do anywhere, any time. When we have all our state societies so federated that one official head with able lieutenants will act for all of them, every meeting of said societies will be mentioned in the press after a systematic method which will bring out the salient features of homœopathy, together with other methods of treatment followed by physicians generally.

My visit to the Middle West was full of interest and profit to me. I visited ten state societies, requiring an absence from home of eighteen consecutive days. This with a previous visit to four other state societies, four local societies, and two business meetings, made a total of thirty-one days devoted to visiting homœopathic organizations.

Right here I want to pay my respects to the societies of the West which contributed to the traveling expenses of this trip; not so much because they contributed to this particular trip, but because they have established a precedent, which should in the future relieve the President of our Institute from paying out his private purse a sum for traveling expenses, which is of no small total. While I am fully conscious that the honor which goes with this high office is supposed to offset a considerable sacrifice of time and money, yet if the custom of inviting the President to address various state and local societies continues to increase, as it has in the past, and the

custom of allowing him to pay his own expenses, in addition to giving his time, continues to prevail, the office will become like that of a United States Senator; none but the rich can afford to be President of the American Institute. In such an event we shall soon have to elect the same President over and over each year.

I know I shall offend the modesty of one of my predecessors in office when I state that he paid out personally for traveling expenses, connected directly with Institute work, no less than a thousand dollars.

I wish to pay my respects also to Dr. Charles E. Sawyer, who arranged and managed my western tour for me from start to finish, and who of his own initiative established the precedent of asking the state societies to pay the traveling expense of the President of the Institute when incurred in their interests.

Returning to the fruits of that trip: I am convinced beyond peradventure of a doubt, that there is all through the country, and in the Middle West especially, a marked awakening of interest and enthusiasm on the part of homœopathic physicians and the laity over matters homœopathic. This was evinced in many ways: first, by an attendance at nearly all the meetings of a number far in excess of those previously held for many years; second, by the number and quality of papers upon homœopathic therapeutics and the enthusiasm with which they were received; third, by the manifest interest displayed by the great majority attending these meetings; fourth, by the quality and quantity of the press reports. In four states I was either introduced by the Governor of the State, or he was a fellow speaker with me. This feature was an excellent one, in that the people and the press are always interested in what their Governor is doing, and when he speaks at a homœopathic meeting the fact is known throughout the state. In two states the Presidents of State Universities were fellow speakers, thus linking homœopathy with educational institutions.

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I was further impressed by the methods adopted by the various state societies for interesting their respective members in the approaching meetings, and the character of the programs. Here it is that the success of a meeting depends largely upon the activities, ability, and resourcefulness of the secretary. A poor secretary will kill the most active society ever created, and, conversely, an ideal secretary will build up a society even though it be half dead.

While I am fully aware that "comparisons are odious," or to be more exactly Shakespearian, "odorous," yet I am going to make one comparison. A rooster once invited his favorite hen to take a walk with him. He led her to a big ostrich farm and there showed her a nest with three great ostrich eggs in it. The hen looked at them in startled surprise, while the rooster eyed her narrowly. Then he said, "Mrs. Hen, I do not wish to criticise, nor make unpleasant comparisons, but I have brought you down here and showed you these eggs so that you might see what other hens are doing."

When I saw the program of the Missouri Institute I thought it was a schedule for a summer school, and it whetted my appetite like an elaborate bill of fare at a first class hotel. It was so full of good things that it did not seem possible any physician could look the program over and stay away from the meeting if he had a particle of desire for professional food. Then when I learned that the forceful, original secretary, now made president, issued a monthly bulletin, equally attractive, throughout the year, I could understand why they had an attendance about three times as great as New York State had at its last meeting, while New York has about three times as many physicians as Missouri. Missouri, you are awake! New York, you have gone to sleep! And I would like to name a lot of your bed fellows who are snoring so loud that we can almost hear them above the swash of the waves here in Atlantic City.

Let me urge every state secretary to make a special study of how best to secure a good attendance and an attractive pro-

gram. It is here that my suggestion in the preliminary address would work out well, that of having the state societies all federated and meetings planned by a central body, and then show the various secretaries how to advertise a meeting.

I shall now take up a subject which is of a very delicate nature, but which concerns us vitally. It has been practically tabooed at previous meetings, but as it will of necessity come before this session for consideration, I shall anticipate it and handle it without gloves. The subject is this: "Membership in the American Medical Association." What, if any, are the inducements made to homœopaths to join this body? Do they receive any direct benefits therefrom? Is their membership therein at all prejudicial in attaining the end, which has been set as our goal, more quickly, if all, or any great number of us join the American Medical Association? What has been the effect upon those of our number who have already joined this body? Perhaps I can best answer the most of these questions by citing a single instance, and as it must be a personal one, I trust you will excuse the personality.

Some nine years ago, when living in Buffalo, the President of the old school New York State Medical Society came to me and asked if I would join the Buffalo Academy of Medicine. He explained that it was an unofficial medical organization, purely local in character, and it was their desire to have all reputable physicians of Buffalo become members. I called his attention to the fact that I was a homœopathic physician, and as that was an old school organization it might not be mutually congenial. He said he had asked me because I was a homœopath, and that all the homœopaths would be asked to join. I asked him what attitude the old school men would take toward the homœopaths. He replied, "They all will be treated like physicians without the slightest discrimination." I then asked him plainly if a homœopath desired to discuss homœopathic therapeutics before the Academy would he be given a respectable hearing and would the subject be discussed? He said, "Come and try it." I took him at his word,

joined the Academy, and found in that particular body of physicians a readiness to hear and learn about homœopathy.

Later I was asked to join the Erie County Medical Society. Here I put up the same challenge and found that while the County Society was an arm of the American Medical Association I was urged to join that without surrendering any of my principles or beliefs, nor signing away my birthright. I saw nothing in their constitution which prohibited my practicing sectarian medicine, so-called. While I had gained no benefits either personally or professionally from joining either of these bodies, save a pleasant acquaintanceship, and the parting with a few dollars in dues, I became interested in the subject from another point of view.

Suppose a large number of our homœopathic physicians were to join the old school state society and the American Medical Association, and do there as was done in the local society, by physicians together and discuss homœopathic therapeutics as freely as other medical subjects were discussed, would it not be possible to create a little leaven in the great batch of medical bread and thereby cause an uplift of the crust? My optimism only excelled my innocence and inexperience. I joined the State Society and later the American Medical Association. It is only fair to myself to say that I did not expect any personal benefits from this action. I was actuated purely and simply by an impulse to advance our own cause and I honestly believed that such might result. I talked with other of our men who had done likewise and together we believed we could help the old school men to better understand homœopathy, and thereby secure a more tolerant feeling toward it.

The Buffalo situation was rather unique in its open mindedness and was therefore misleading in the larger situation. To make a long story short, the leaven act was a flat failure, Nothing "rose" from it except the yearly dues. For seven years I was a member of the American Medical Association. I kept in touch with its work, by reading its Journal. As I

did not join for the purpose or with the expectation of receiving any benefit I was not disappointed in receiving none. But this point I wish to emphasize, that in those seven years I did not get one iota of benefit or privilege as a physician which I could not have obtained just as fully or completely by being a member of any of our state societies or of the American Institute. I say this because the fact is advertised very fully by the American Medical Association that physicians, especially homœopathic, can and will receive many privileges and benefits denied to others, by joining American Medical Association. My experience did not prove that as true. If there are any such privileges I should like to know them, in order that we as a strong national body may extend the same to our members.

After giving the subject most careful consideration I concluded that membership in the American Medical Association was not only useless and unnecessary, but that it was prejudicial to the best interests of the American Institute in particular, and to homœopathy in general; that the money I paid to this medico-political body was used in fighting our cause and might, if unchecked, hasten our death; that it might lead some to renounce homœopathy entirely, especially those physicians who are situated remote from homœopathic associations; that we could best fight our battles by being absolutely independent of any alliance with that body. But especially did I become convinced, as have many physicians of the old school, that the American Medical Association was fast degenerating into a political machine bent on throttling everything which stood in its way of obtaining medical supremacy; that it had made an unholy alliance with the Medical Department of the Army and Navy and together they propose to own and control every medical college in this country, all the state, municipal, and university hospitals, and get into their grasp all examining and licensing boards in the United States. I am convinced that it is the intent of the political leaders in this big ring to throttle every homœopathic, every

eclectic, and every osteopathic institution in the land. Understand, I do not say that this is the intention or even the wish of the old school branch of the profession, for there are amongst them as bitter enemies to the action of the American Medical Association as are to be found amongst us.

A man once said, "Honesty is the best policy. I know because I have tried both." I know something that the American Medical Association has to offer in membership and I know what the American Institute has to offer, for I have tried both. Because of my convictions in this and because of my conclusions I feel justified in urging every member of the Institute and every homœopathic physician in the United States who is a member of the American Medical Association to resign therefrom and give his time, interest, and money to the Institute. If he is interested in the final triumph of the homœopathic school he cannot fail to see that his duty lies clearly in taking such a course.

I therefore wrote the following letter to one of the officers of the American Medical Association :

May 5, 1914.

Dr. Frederick R. Green,

535 N. Dearborn St., Chicago, III.

Dear Doctor :

As we have had a little correspondence I am directing this letter to you rather than to the Secretary of the A. M. A.

I joined the A. M. A. some years ago, not that I expected any personal benefits therefrom, as I was experiencing all the benefits which I could absorb from membership in the various state, county, local, national homœopathic societies, but I joined for two purposes : first, to determine if I would be called upon to renounce any of homœopathic beliefs or affiliation ; second with the hope that I might be able to contribute something, little though it might be, toward hastening that day in which the lines of demarkation between the schools might be obliterated. I had a belief that by a number of our leading men joining the A. M. A. there would be a little leaven of homœo-

pathy set to work whereby there might result a softening of prejudice and a scientific spirit of inquiry fostered, sufficient to lead to an occasional investigation of our method of drug selection. In short, to do my little part toward overcoming prejudice and substituting toleration and trial.

But I now throw up my hands; I have accomplished nothing by my membership in the A. M. A., nor do I believe any member of the homœopathic fraternity will ever accomplish anything by such membership. The attitude of the A. M. A. is simply impossible and impervious to anything which does not minister to its self-seeking ends. It has clearly stated its attitude towards homœopathy, which is, by influences, to absorb its votaries and annihilate its existence. In the publication of such articles as that of Dr. Benjamin Nichols a year ago, *New England Medical Gazette*, April, 1913 and the attitude taken by the publisher of your directory wherein he refuses to give any homœopathic physician credit for being a member of a state or county society if that society happens to be a homœopathic society (*Gazette*, February, 1914), you have given unmistakable evidence of going back to the early days of bigotry and prejudice which characterized the medical bigots of a hundred years ago. Hence I ask for my "passports," as I wish to terminate my self-made "diplomatic relations."

I prefer to spend such time, effort, and money as I may have at my disposal to strengthen my own school rather than waste it where it will count for nothing. Heretofore my influence has ever been against any restriction being placed upon our members in joining old school societies. Hereafter it will most emphatically be against such membership, either local or national, and I want to say here, that the A. M. A. will never in this world bring about "medical union" by such a bigoted attitude as it assumes toward matters homœopathic. Its avowed conquest of our schools by a process of absorption will never win out.

You have obliged us to take a militant attitude and we

shall pursue that until you show signs of investigating our claims.

Yours very truly,

DE WITT G. WILCOX.

According to the Directory of 1912 there are 93 members of the American Institute who are members of the American Medical Association. 'I would suggest that instead of the Stout resolution being discussed, which is in the form of a demand that all of our members resign from the American Medical Association, that the matter be referred to a committee of three whose duty shall be to write a personal letter to every such physician who is a member both of the Institute and the American Medical Association, urging him to resign from the latter. I wish only to cite one instance as showing the policy of the manager of the American Medical Association Directory toward homœopathic physicians. To make that clear, I will quote from one of my editorials in the *New England Medical Gazette*.

"In the beginning was the American Medical Association, and the American Medical Association was with God, and the American Medical Association was God. All medical things are made by the American Medical Association and without the American Medical Association was not anything made that was made. If you dot believe it read the correspondence on the following pages concerning the forthcoming edition of the new Directory to be published by the said American Medical Association.

"This creature of the Almighty has set out to issue for the benefit of the medical profession a Directory. It advertises in red ink that said Directory will be the most complete, accurate, and useful Directory ever published since (we naturally assume) the Mosaic account of the creation. In fact, as we read what it will contain and how infallible it will be, we conclude that it must be more accurate than the Mosaic account, because that was only divinely inspired, while this is edited by the American Medical Association.

“Unfortunately, the first pin which is stuck into the red ink balloon causes a nasty smell and a collapse. It is complete only according to the publisher’s standard of completeness. It is accurate when you accept the premises that only members of the American Medical Association are physicians. All others are sectarian pirps. It is accurate so far as it pertains to the members of the American Medical Association, and it is useful so far as it advertises the American Medical Association. But when it comes to truthfulness it is an Ananias Club with Ananias and Sapphira as President, Vice-President, Secretary and Treasurer all combined, and then it lies some. Kindly note some of its Ananias hereditary factors.

“The prospectus reads (with red ink and fire-crackers) a ‘Register of legally qualified physicians of the United States and its Dependencies.’ It then promises every legally qualified physician whose name appears in the Directory, and who is a member of a state or county society to so designate that fact by a letter or symbol after his name. Will the publishers do it? For answer note the direct question asked the publishers by the Editor of the *Gazette* in the preceding letter, and then note the answer in reply thereto. ‘We are not compiling a Directory of Sectarians.’ In other words, Mr. Legally-qualified-physician-of-the-homœopathic-school, if you are a member of your State Homœopathic Medical society, which society is chartered by your State and has a legal existence, and if you are not a member of the allopathic state society, your name goes down in this wonderful, accurate, complete and useful Directory as a medical nonentity. You are designated in that Directory as not being enough of a doctor to belong to any county or state medical society. To put it plainer and in real Sunday school language, they have lied about you. Why? Because they will not recognize your state society as having any legal existence!

“It is a serious question whether or not the publishers of said Directory are not seeking to obtain money under false pretenses when they advertise positively to give certain definite

information concerning the physicians therein registered and then fail absolutely to keep their agreement. Note this paragraph in their printed prospectus (more red ink).

"**TO BUSINESS MEN.** The new edition will appeal to business men because it will be a Blue Book (with red ink) of the Medical Profession; because they can select the physicians they wish to reach and be certain these are interested in the specialty stated; because there are no duplicate names; *because it contains a list of members of County Societies and State Associations.*' They do not qualify that statement and say 'sectarian state societies excepted.' They put it positive and thereby make themselves actionable for deliberate and intentional fraud. The only excuse which they can possibly render for not designating homœopathic physicians as members of state and county societies is their arrogant position that we did not belong to the medical profession, but are sectarian."

My friends, I appeal to you as a loyal homœopath to rally to our cause. We have no selfish interests to advance or to sustain. We believe we have a superior system by which drugs are selected and administered to the sick. In following that system we are simply specialists in internal medicine. We are not sectarians. We want all people to have the advantage of our superior method. As you know, for years we have asked the American Medical Association to join with us in proving the truth or error of our belief. So long ago as 1905, while president of the New York state society, I advocated in my annual address the action which Doctor Schenck and his committee have so splendidly worked out. We await their decision to act upon our very practicable, workable plan. If they will do it we will co-operate in every way possible to have the test, made thoroughly and with finality. If they refuse, if they remain indifferent, then our slogan should be "Militant Homœopathy," and militant homœopathy means a return to the old-time warfare where the lines shall be drawn hard and fast between the allopaths and the homœopaths.

Again I ask the question, Why are we making all this struggle? Is it worth while? Is it not better to surrender and join the great army of the dominant school and practice just what we wish? Why not surrender all our colleges, hospitals, and institutions of medicine?

In answer to these questions I see an uprising on the part of ten thousand physicians in this country, physicians who have been half indifferent in their loyalty, yet at the word "surrender" they leap to their feet at once. And the reason that we will not surrender is not because we have a personal interest at stake, for it might be to our personal advantage to surrender and to practice quietly with less sacrifice of time and money than at present. It is because there is a principle involved.

The signs are everywhere about us that homœopathy is coming into its own. It is for us to recognize that fact and to seize the occasion for making sure to coming. Like all opportunities, it must be taken at the flood or it will be lost.

Note the tone of victory in the letters of Dr. Petrie Hoyle of London, concerning the work of the International Council; how the best minds in Europe, the royalty, and the common people are flocking to the lectures given by our able men on homœopathy. Dr. Leon Brasol of St. Petersburg, Russia, tells us he expects soon to see a Homœopathic Medical College opened in Moscow. Doctor Vasconcellous of Rio de Janeiro, Brazil, at the last International Homœopathic Congress told of the splendid achievements of homœopathy in South America. He says: "In each of ten or twelve general hospitals there is a homœopathic section. In the army there are homœopathic doctors officially recognized and eligible for the military and state honors. Its security seems even greater than it is in the United States."

In Germany, the home of Mahnemann, there is a marked awakening to the unquestioned benefits of the homœopathic treatment. The school is really bewildered by the marked interest and widespread enthusiasm over homœopathy. They

do not know whether to continue to love us as they have been doing, or to fight us as of old. The better thinkers amongst them see the wisdom of doing neither, but of recognizing our principles. Note what the editor of the new born *Cincinnati Medical News* says: "It is a pleasure to chronicle the renewed activity of the followers of Hahnemann. While the editor of the *Medical News* is an exponent of the old school, he is devoting its pages to furthering the best interests of every school of medicine. In this day and generation to do less would be to stultify the name of medicine." Thus do we witness the Renaissance of Homœopathy.

So, if you ask me the limit of homœopathy, either as to time, space, or application, I say it is unlimited; it is good for all the nations of the earth, at all times, and for all diseases that are amenable to drugs. I once heard a man who in his enthusiasm for his country bounded the United States without a limit; and so I shall bound the limits of homœopathy by saying it is bounded on the north by *auroraborealis*, on the east by primeval chaos, on the south by the conjunction of the equinoxes; and on the west by the day of judgment.—*The Journal of the American Institute of Homœopathy*, August, 1914.

EDITOR'S NOTES.

Bactericidal Action of Bile.

R. Toida (*Zentralbl. f. Chir.*, May 2nd, 1914) obtained bile from thirty-five living men and eight live dogs by puncture of the gall bladder. He found that bile from healthy subjects was always sterile. Various pathogenic bacteria react differently when provided with bile as a culture medium. *B. coli communis* and *B. typhosus* flourish when placed in bile; it is a somewhat less favourable medium for the growth of *B. paratyphosus*. *B.*, the Shiga-Kruse dysentery bacillus, and the bacillus of Asiatic cholera. Bile is definitely inferior to broth as a medium for *Staphylococcus pyogenes aureus*, though growth occurs. *Streptococcus pyogenes* and the pneumococcus growth either very feebly or not at all. Dog's bile was generally found to be a worse medium than human bile. The morphology and staining reactions of the bacteria investigated were not affected by growth in the fluid. The virulence of *B. coli communis* is enhanced by culture in bile. Other workers (Neufeld, Hiokawa) have observed decomposition of sodium taurocholate by bacterial action; this is not confirmed by the author's observations. Toida's work was done in Japan, where the biliary secretion possibly differs slightly from that of the average European; he finds that his results, however, are in general agreement with those of other workers.—The *British Medical Journal*, July 18, 1914.

Vital Statistics and War.

WE learn from the *Medical Record* that the Department of Health of New York has recently issued a compilation of statistics which "explain why the Kaiser is able to put so large an army of young fighters into the field, and, perhaps, also indicate why Germany preferred fighting now to postponing the conflict." In 1880, it is stated, Berlin had the highest birth-rate of the large European cities—40 births per 1,000 of population. This lead it held from 1880 until 1893, at which time London took the leading place. In the following year the

birth-rates in both London and New York were larger than in Berlin. "It is clear," says the *Bulletin* of the Department, "that the enormous birth-rate between 1860 and 1893 still shows its effect in the present German army, for all these individuals are now between 21 and 34 years old, and therefore constitute the flower of the fighting force. With the decline in the birth-rate, and especially since Berlin was passed by London in 1893, it must have been clear to the Kaiser that the prospects for a continuation of an overwhelmingly large army were becoming dimmed." The Napoleonic doctrine that Providence is always on the side of the big battalions is firmly implanted in the Teutonic military mind, and it is at least conceivable that those who direct the policy of Germany may have chosen the time to strike a blow for the mastery of the world before the shrinkage in the number of their "cannon fodder" began to make itself felt. It may be mentioned that in 1913 the birth-rate of New York was 26 per 1,000 of the population; of London, 23; of Berlin, 20; of Paris, 17; and of Brussels, 16.—The *British Medical Journal*, September 12, 1914.

Immunity in Measles.

C. S. Woods says that Hektoen's experiments seem to prove that measles may be transmitted by injecting the blood of a person with measles into another person in normal health. One might infer that infants *in utero* would have measles if the mother had them. He had seen a woman in the eighth month of pregnancy with the usual signs of measles who had never had the disease. Two children in the family were just recovering from measles. She recovered without any unfavorable results, and some three weeks later was delivered of a healthy child. That the child had acquired measles from the mother he thought likely, and says that perhaps it did. Recently he heard that the child had a severe attack of measles in the past spring; while it is true that measles may attack a second, and even a third time, this child, while *in utero* must have had the most ideal opportunity for acquiring immunity. It is impossible to say that it did not

have measles *in utero*. Children have been born with measles, smallpox, and other diseases certainly contracted from the mother. This case emphasizes the great difficulty of securing immunity, as well as the remarkable power of the virus of measles to invade the human organism.—*New York Medical Journal*, September 19, 1914.

Influence of Tropical Residence on the Blood.

W. P. Chamberlain reports observations carried out in about 1,500 presumably healthy adult male residents of the Philippine Islands, including both natives and Americans. The figures obtained as to erythrocyte count and hemoglobin percentage did not indicate an impoverished condition of the blood. A tropical anemia due to the effect of climate probably does not exist. Much of the anemia formerly classed as tropical is due to infections with plasmodia, uncinaria, and leishmania. Tropical pallor is due merely to peripheral vasoconstriction, less blood being required to maintain the proper surface temperature than in colder climates. As to the leucocyte count, the blood of Filipinos showed a total white cell count not exceeding normal limits; a markedly low percentage of polymorphonuclear neutrophils; a high percentage of cells belonging to Arnett's classes I and II, which are believed to be relatively deficient in phagocytic power. Thus, the blood of Filipinos shows an absolute reduction in efficient phagocytes, suggesting a diminished resistance to some or all infections. Slight deviations in the same direction were met with in the white races in the Philippines.—*New York Medical Journal*, September 12, 1914.

Function of the Periosteum.

J. E. Moore and J. E. Corbett from studies of animals draw the following conclusions: Cutting the nutrient artery prevents the formation of the subperiosteal bridge. As the nutrient artery supplies medullary bone, and as the periosteum is left intact when the artery is cut, it is assumed that the

medullary bone is responsible for the subperiosteal bridge. The subperiosteal bridge may fill in the gaps left in the periosteum, therefore it is not absolutely dependent upon that structure even as a place of refuge. The subperiosteal bridge is more marked where it receives osteoblasts from two sources rather than one. Fascia is a substitute for periosteum. In heterotopic transplants, no subperiosteal bone could be produced by irritation. This is somewhat surprising in that the heterotopic experiments were conducted upon rabbits. Old scars in these animals frequently contain true bone, and the periosteal device of Schepelmann begets bone in the peritoneal cavity. At the present day the periosteum is disregarded. The present day surgeon may be comparatively indifferent to the periosteum when operating upon bone. If it is convenient he preserves it, because the conservation of tissue is always good surgery, but if it is not convenient, he does not hesitate to sacrifice it, knowing that it is not an essential element in the healing of bone.—*New York Medical Journal*, September 12, 1914.

Breast feeding of infants and racial decay.

The connexion between the breast feeding of infants and racial decay may at first sight not appear very close; but the loss, whether real or artificially induced, of the mammalian instinct in the women of a nation is not to be lightly disregarded by those interested in the preservation of national health and prosperity. The decline of breast feeding amongst modern mothers forms the subject of an interesting article by Mr. Harold K. Waller which appeared in the June number of *The Child*. In it the author discusses the reasons for this decline and the means of checking an evil which threatens to prove a source of serious danger to the future welfare of the race. "There is a tendency," remarks Mr. Waller, "to consider lactation as an unstable phenomenon, and the privilege accompaniment to robust physique, associated with the type of intellect that is erroneously considered somewhat low in the scale of culture." Public

opinion, moreover, especially of late years, tends to regard lactation as an additional burden upon the mother, and one that can be dispensed with without endangering the health of either mother or child. The fallacies upon which such theories are founded are exposed by Mr. Waller, who proves that the successful rearing of children at the breast is by no means so difficult or complicated a matter as it is often asserted to be, and that it is, in fact, far less troublesome and dangerous than artificial feeding upon patent foods. Much, of course, depends upon the patience of the mother and the formation of good habits in the child; but these being once acquired, there is no reason why, in the majority of cases, a healthy woman should not provide her child with that natural food for which, as yet, no satisfactory substitute has been found. The June number of *The Child* also contains articles by Dr. A. Gilmour on school dentistry, and by Dr. Edward F. M. Neave on squint in childhood; whilst Dr. G. de Swietochowski gives some valuable advice as to the prevention and treatment of spinal deformities; and Miss Alice Ravenhill has contributed a short account of the health of children in the public schools of British Columbia.—*The British Medical Journal*, June 18, 1914.

On a Hospital Ship.

As the hospital ship is something of a novelty in naval warfare, it may be interesting to give some account of the staffing and equipment of such a vessel. The following extracts from letters from a young surgeon of the Royal Naval Reserve Volunteers who is serving on one of them may give an idea of the organization of this modern adjunct to the medical service of the navy. They will also show the spirit in which our young doctors have gone to serve their country. After announcing during the early days of August that mobilization orders had arrived and that he was starting to join a hospital ship, he says: "Everybody tells me that getting on a hospital ship is about the best job one could get, so I am very lucky. I hope to goodness we get away before any action is fought." In a later note he

describes his ship: "They have certainly spread themselves in doing us well. We have beds for about 190 patients, and our medical complement is principal medical officer, 6 surgeons, 6 dressers, 4 nursing sisters, and about 40 naval sick berth nurses (males). We have two theatres—really quite nice considering, with lifts down from the main deck to the wards, laundry, etc., in addition. Our own cabins are very nice, large and airy, with electric fans. There is quite decent bathroom accommodation. She is quite a large ship, employed in peace time as a troopship, and ought to be a pretty good sea boat. The crew have their own doctor quite apart from us. There is no doubt about it that this is the billet to get in war time. Our principal medical officer strikes me as being a very nice man. Somehow he knew that I was senior resident at the ——— Hospital. On the whole I think I am in for a thoroughly good thing, and I hope I am able to make the most of it." After the ship had sailed for her destination he writes: "We have been very busy getting everything straight and ready for business. All things considered we are really fitted up very nicely. We have two operating theatres, over one of which I have charge, and I also, of course, have my own ward to look after. My quarters are extremely comfortable."—The *British Medical Journal*, September 12, 1914.

"Chiropractic."

Milton tells us that when his *Tetrachordon* was first offered for sale people said,

Bless us, what a word on

A title page is this!

Many readers may feel moved to a like exclamation when they see the word at the head of this article. And they may ask, what is "chiropractic"? We ourselves first saw it in a list of "drugless healers" enumerated in a bill for the regulation of medical practice in California, which we read in the *Pacific Medical Journal* not very long ago. Taken at its face value it would mean nothing more than treatment with the hand. But from the *Canadian Journal of Medicine and Surgery* for May we gather that a fuller definition is given in a pamphlet recently distributed in Toronto. According to that authority, doctors of "chiropractic" treat disease with "no medicine, no surgery, no osteopathy." Disease is said to be caused by "displaced vertebrae in the spine." Health results from the free flow of the "life current" from the brain, the dynamo, through the spinal cord and spinal nerves to all parts of the body. If the vertebrae of the spine become displaced and impinge on the spinal nerves, shutting off the life current from wherever the nerves lead to, the result is disease. When consulted by a patient, a doctor of chiropractic adjusts a displaced vertebra, relieves pressure on the nerves so as to permit the life current to flow once more through the nerves; health is thus again established. A chiropractor, therefore, is a sort of electrician, who makes it his business to discover defects in the wiring of a human machine, and to remedy them by adjusting displaced vertebrae. Take a case of abscess in the groin, the chiropractic method of cure is to adjust the displaced vertebrae impinging on the nerves which supply the lymphatics of the groin. After the necessary adjustment has been made, the life current flows once more from the dynamo; the bubo is cured. If the disease to be dealt with is a psoas abscess, a quinsy, an empyema, it is equally curable, for the pathology is always the same. It is as simple as lying. Asthma, appendicitis, anæmia, bladder trouble,

bronchitis, Bright's disease, biliousness, cancer, catarrh, constipation, convulsions, deafness, diabetes, diarrhoea, diphtheria, epilepsy, eruptions, eye trouble, female diseases, fevers, and a number of other diseases—*pourquoi s'arreter en si beau chemin?*—are all cured by the same procedure. The chiropractic art would therefore seem to be sufficiently simple in theory. All that has to be done is to identify the vertebra the displacement of which causes, say, epilepsy, or the one responsible, say, for cancer of the intestine, then adjust it, and hey presto cockalorum! the disease is cured. But how is one to discover the errant vertebra? And is the "adjustment" quite so simple a matter as it would appear? The system seems to be symbolized in Dogberry's instructions to the watch. The "chiropractic" operator is to "comprehend all vagrom" vertebrae, and bid them go to their places. If any refractory bone will not do so, "take no note of him, but let him go; and presently call the rest of the watch together, and, thank God, you are rid of the knave." It is claimed for "chiropractic" that it differs from osteopathy. The difference seem to be like that between tweedledum and tweedledee. What difference there may be is in favour of osteopathy. The results of an impartial investigation of osteopathy—which is a system of curing "subluxations" of bones, thickened ligaments, and contracted muscles by manipulation—by Dr. Alexander Bryce were published in the BRITISH MEDICAL JOURNAL of September 3rd, 1910. It is, as he says, a system of one idea, and that, we venture to add, to a large extent a wrong one. This was to be expected in view of the utterly inadequate training given in the eight schools of osteopathy in the United States. An account of these schools was given to the Governor of New York by Mr. Abraham Flexner, who has personally inspected them all. His statement, which was published in the *Journal of the American Medical Association* of June 6th, shows the worthlessness of the educational and scientific claims of osteopathy. We know nothing of the schools—if any such there be—where "chiropractic" is taught, but to judge from the doctrine on which it is said to be founded, we think it may safely be assumed that the knowledge imparted there can have no scientific value.—The *British Medical Journal*, July 18, 1914.

CLINICAL RECORD.

CLINICAL REPORTS.

By W. H. FREEMAN, M.D.

Mr. X., age 58. Neurasthenia for eight months. Extremely melancholic, desponded and discouraged. A dark, hopeless gloom hangs over him constantly like a dark cloud. Constant anxiety. Fears that he will lose his fortune; that his business will fail; that business conditions are going to the bad; even though his business affairs are in good shape.

Dreads thinking, planning, or business affairs, or mental exertion of any kind. Unable to concentrate mind on any subject other than his ailment.

Sleepless first few hours after retiring. Sleep is unrefreshing.

Generally worse mornings and forenoons; feels best in the evening. Worse after mental exertion.

Physical examination.—A well-nourished, well-developed man of medium height, weighing 160 pounds, and presenting the appearance of perfect health.

Examination of blood, urine, and gastric contents negative.

Blood pressure 125.

Digestion O. K., bowels regular, all functions normal.

History.—Has never used liquor nor tobacco; has taken no medicine nor drugs of any kind; has always led a clean, regular life free from all forms of dissipation: no specific history. Always of a cheerful, optimistic disposition until recently. Never ill before except for certain malaria forty years ago.

Has been a successful business man, and is now financially independent; but invested part of his fortune in stocks, several years ago, and has been greatly worried by the depreciation in values.

Has been a Christian Scientist for many years, but the latter treatment, though persisted in for the last eight months, has failed to relieve him, and he has grown steadily worse.

Feb. 4, 1914. R.—Picric acid 12 \times , T. i. d., and ordered to take a trip to West Indies for a month's vacation.

Feb. 6, "Feeling somewhat better." Has made arrangements for the steamer trip.

Feb. 8, "Feeling very much better. Doubts the necessity for a vacation."

Feb. 10, Feels so much better, thinks he can get along now without medicine."

Feb. 15, "Has not taken any medicine since last visit. Enjoys business again as of old. No time nor inclination for a vacation."

II. Gus. B., age 15. Pastular eczema, dorsum of feet and toes and between toes; scabby, moist purulent, and ulcerated; sticking, needle-like pains; itching excessively; worse evenings; worse in cold weather; better in warm weather.

Attacks begin in November and last until April or May,—this being the fourth year of the affliction. Is unable to wear shoes, comes to the office wearing slippers. Has tried various ointments without relief; now using plain vaseline on the dressings.

Bowels regular, but has been taking epsom salts to "clear his blood." Nose bleed off and on since infancy. Severe hæmorrhages from mouth and nose as a baby, which were relieved by another physician. Always well and free from symptoms otherwise.

Feb. 6, 1914. R. Petroleum, 1 m., one dose, and vaseline on dressings continued.

Feb. 10, decided improvement. R. S.L.

Feb. 17, very much better; wearing shoes. R. S.L.

Feb. 24, almost well. R. S.L. Has not reported since.

III. George C., age 40. Since getting wet while shoveling snow during the recent storm:

Cough—dry, constant, spasmodic.

Worse in warm room, better in open air.

Better lying in bed with windows open.

Worse upon rising from bed.

Sneezing constantly, with copious watery discharge and stoppage of both nostrils.

Worse in the house, better in the open air.

Worse when at rest, better, when moving about.

Right lumbar region :

Pain worse on coughing.

Worse after any sudden movement.

Worse at the beginning of motion after rest.

Worse after rising from stooping.

R. Dulcamara 200. Patient said he felt markedly relieved within one hour after first dose and also did not take any more medicine until next morning ; when, after a good night's sleep he awakened without fever, but for a slight return of the cough he took a second dose of medicine with quick relief. Had a slight return of the cough again on the following morning, for which he took a third dose of the medicine, after which there was no further trouble.

Another physician having suggested the giving of some reason for selecting dulcamara rather than rhus, gelsemium, or one of the other drugs so frequently curative for grippe—the writer attempts to do so now with the aid of Kent's Repertory, although as the case was prescribed for without such a comparison the method of explaining may possibly be opened to some criticism.

P. 1379, aggr. getting wet ;

P. 1370, aggr. warmth or (P. 1371) worse in warm room ;

P. 1335, relief from motion ;

P. 797, spasmodic cough ;

P. 332, coryza, and P. 338, watery discharge ;

P. 355, sneezing ;

* 345, nasal obstruction ;—which results in the following list of drugs, each of which is found in all of these rubrics—Calc. c., Carbo-v., Caust., Dule., Calc., Iach., Lyc., Nit. ac., Puls., Sep., Snl., Zinc.

If we are not already certain which one of these drugs is the simillimum, we should refer to the materia medica before making a choice. If we do this, it will be found the dulcamara is the only drug which accurately fits the case.—*The North American Journal of Homœopathy*, June, 1914, ,

CASES FROM PRACTICE.

By R. S. STEPHENSON, M.D.

CASE I.—*Melancholia*.—A business man gradually becoming depressed and peculiar. He lost all self-confidence.

He was frequently weeping, at other times would laugh and grimace when he thought he was alone.

He avoided all his acquaintances, shunning everybody. A knock at the front door would send him into a panic, thinking it was someone coming to take him to an asylum.

He was *full of fears*, *timid* and suspicious, quite contrary to his usual state of mind.

He had been ill for five months when I saw him, had given up business and was steadily getting worse.

He was given *Baryta Carb.* 200, which has just the above timidity, etc.

In one month he was better, still very nervous, but had far more self-control and had lost some of his fears.

In two months was much better.

In three months he was well and back at work, where his employers had never expected to see him again, especially as he was past the prime of life.

He remains in good health.

The remedy was given in infrequent doses as called for by the symptoms.

CASE 2.—*Mental Disease*.—Also a business man, who overworked himself habitually. Some years before he had had a nervous breakdown and been in a mental hospital. He suffered much from insomnia, was confused, had delusions that his children were ill, that his wife was going out of her mind, that their business was ruined.

He had long suffered from cold, damp feet, and was chilly. All these symptoms, especially the *confusion of mind*, the *fear of misfortune and of insanity*, are to be found under *Calcarea Carb.*, which was given with the happiest results in the 200 dilution. He returned to his work in three or four weeks, and has remained well for some years now.

CASE 3.—*Melancholia with suicidal tendency*.—A young lady with a family history of mental disease.

One brother committed suicide and the shock had helped to unbalance her reason. Three years before she had had an attack of melancholia.

Her state was a sad one; she had been very intelligent, very conscientious, very devoted to her household.

Now when asked to tell her symptoms she could only weep. She seemed to have the ideas, but was totally unable to give them utterance.

She would start a sentence, say two or three words, then stop and stammer and break down in tears.

She was so confused that it would take her an hour to write a brief letter, and then it was not coherent, in fact, she was quite childish.

For some weeks I treated her with *Iguatia*, *Pulsatilla* and *Natrium Mur.* with no benefit. I was then led to give *Thuja* from the symptom "cries when spoken to about herself," as given in Kent's Repertory. *Thuja* did good and for three months she slowly improved under its action. She was still, however, hesitating in speech and very easily confused.

Sepia was next given with good results, the hesitation in speech getting quite better. She then wrote "Am making steady progress, but troubled with much pain in the side and with a peculiar headache at times, a tightening over the forehead as if a cobweb had been pasted and dried on."

This curious sensation is characteristic of *Baryta Carb.* It was given, and she wrote a month later, "The worst symptoms quickly melted away after the powders, indeed I did not believe they could have left one in so short a time. I used to look forward to the days when the powders were to be taken, and usually woke next morning with no trace of the pain in the side and feeling very fit. Have been busy with my housework and have no return of the tightening of the skin of the forehead." She has continued well for over a year now.—*The Homœopathic World*, December 1, 1914.

Cleanings from Contemporary Literature.

THE EVOLUTION OF HOMŒOPATHY.

By JAMES JOHNSTONE, B.A., F.R.C.S., Eng., M.B., C.M.,
D.P.H., Aberd.

INTRODUCTORY.

In opening this the fifty-second meeting of the British Homœopathic Congress, may I assure my colleagues that I am fully appreciative of the honour they have done me in asking me to preside on this occasion. Having regularly attended these Congresses for nearly twenty years, and having placed my humble efforts from time to time at the disposal of the executive, it gives me great pleasure to take this honourable position and, as far as I am able, to assist in making this meeting profitable in its work and happy on its social side.

On these occasions it does us good to meet our colleagues from all over the country; old friendships are revived and new ones made. Away from the stress and wear of work at home we have a little leisure to view our success or failure from a distance and, with a kindly word of sympathy or praise from an old colleague, to estimate our progress, without the influence of local colouring, in a truer light and to feel strengthened and freshened for further endeavour.

Pleasure there is also in recalling the Congresses we have already attended and the memories of some of the stalwarts in homœopathy who have gone to their rest—such as Hughes, Drysdale, Dudgeon and others, and no Congress seemed to us to be complete without the personality of our late secretary, Dyce Brown, to whom it has owed so much.

The most recent memory, that of Liverpool, is still fresh with us, and our colleagues in that city have set us a brilliant example of co-operation and kind hospitality of which we are gratefully sensible and which we will find it hard to beat.

London this year is going to do its best and your executive guided and inspired by your worthy Secretary, have prepared for you a programme which they trust will meet with your approval.

We made a start yesterday with the lighter part of the programme, and the golfers we know had a pleasant day and a happy time on the links. In the evening at the reception we were gladdened by the presence of a goodly company, which we hope has passed a good night and is ready for the more serious work of this morning.

But enough of ourselves and our insular interests. We have those with us who have come from afar. In the name of the Congress let me extend a word of welcome and a grip of friendship to our colleagues from other countries.

We hope they will make themselves quite at home, help us with their counsel and experience in debate, and permit us to offer them such hearty hospitality that they will carry to their own countries an indelible impression that the heart of the British homœopath is honest, open and warm.

THE EVOLUTION OF HOMŒOPATHY.

Having cleared the ground of these preliminaries, I propose to say something about the evolution of homœopathy.

The question will at once suggest itself to a certain section of my audience: Can there be any evolution or progressive change in homœopathy? I would reply that if we are referring to the homœopathic law or rule of practice, *viz.*, "Let likes be cured by likes," no evolution can be possible. We cannot speak of the evolution of the law of gravity, for there can be no change in that law. Our knowledge may increase as to its influence on matter in various phases—in aviation for instance, a recent phase of moving matter, or in the levitased railway, the very latest phase. So with homœopathy there can be no change in its guiding principle. *It is with its application to varying times and phases of human thought and scientific knowledge that we propose to deal.* As human thought, knowledge, social conditions and politics have evolved, and in this twentieth century are evolving very rapidly, so we may say that as all these affect the scope and application of the homœopathic law, homœopathic practice must be evolving. It will be my endeavour to indicate, in the time at my disposal this morning, some of the ways in which these changes are taking place, and also what particular class of homœopathic practice is being most affected.

CLASSES OF HOMŒOPATHIC PRACTITIONERS.

That there are classes of homœopathic practitioners you will doubtless admit, and they might briefly be detailed thus. Each and all may be sound homœopaths, or Hahnemannians, if you like the word better, but each has a different sphere for the use of the homœopathic rule. First there is the homœopathic practitioner in country districts or small towns, generally working alone, often having to fight alone. His *we* know is the hardest lot of all. Then there is the town or suburban practitioner, doing general

practice, perhaps taking up a particular speciality, but always able to rely on colleagues for help and advice in other specialities and when serious cases are to be dealt with.

Thirdly, we have the specialist, who while exploiting a certain speciality in medicine or surgery, substitutes his homœopathic therapeutics, when therapeutics are required, for those of the old school; and *lastly*, we have the homœopathic purist, whose sole rôle is to find the totality of symptoms and to work out the appropriate remedy.

The last class in this list, *viz.*, the specialists or purists in homœopathy, is little affected by changes in environment as the decades roll by, for drug action and human symptoms are the same as when Hahnemann lived. The first on the list, the homœopathic general practitioner in the country or small town, the worker alone, is very much affected by the changes of time, and it is particularly from his point of view that I would discuss the evolution of homœopathic practice.

RETROSPECT.

To enable us to see exactly what changes have evolved, let us look back a century or more to the time when Hahnemann, the founder of homœopathy, was in full swing, and compare the conditions surrounding homœopathic practice then and now.

One hundred years ago in homœopathy, on the lines laid down by Hahnemann, the treatment of disease was almost entirely therapeutic, *i.e.*, the finding and administering of the appropriate remedy. External applications such as lotions, ointments, counter-irritation, blistering, &c., were forbidden or discouraged. Diet was in some measure restricted; coffee, acids, &c., fell under the medical ban. (By the way, I often have wondered why smoking was not restricted, like coffee drinking. Certainly the alkaloid in tobacco has greater physiological effect than that in coffee, and yet I can recall cases of some stalwarts of homœopathy, some of the veterans at the end of last century, who inherited many of the homœopathic traditions almost at first hand, and yet were confirmed smokers without apparent damage to themselves or their practice. May be that they preached one thing and practised another, but this is a digression.) To repeat, the practice, in the springtime of homœopathy was medicinal only.

And why was this? Largely, we may take it because local applications, apart from the use of heat and cold, were used without any plan or reason, simply by tradition or empirically, and in the

light of later knowledge we know these local measures were more or less useless, except perhaps in giving the patient confidence in feeling that something tangible was being done, an artifice of which we may plead guilty even in this enlightened age.

Of the infectious nature of disease and its discharges almost nothing was known and little dreamt of. We know that Hahnemann himself was in some respects an exception to this generalization, for we find in his lesser writings the idea of infection, as we know it, clearly fore-shadowed though he never saw a bacillus or even conceived its existence; yet he laid down directions for the isolation of the sick and the protection of the healthy much as we do now. In that respect alone we have a glimpse of his genius. Had he lived to-day he would have been a great sanitary reformer like Pöttgenkofer, Koch, or Ronald Ross.

At that time also nothing really effective was known or done in the treatment of special organs like eye, nose, heart, bladder, or reproductive organs. Surgery also was simple, barbaric and cruel. Amputations were the rule because disease had progressed or could not be stopped and removal of the hopeless member was the only course left. Surgery, moreover, in addition to being crude was also meddlesome and made matters worse; with infected instruments, infected hands, infected skin, infected dressings, no wonder that grave results ensued from major and even minor surgery. This certainly was one of the reasons why Hahnemann was adverse to surgery. He preferred to rely on the healing power of his medicines and of nature. He impressed this upon his followers and formulated the practice. From Hahnemann it became traditional, and the traditions, like folk-lore, persisted through the century and are with us now.

Hence we still find, sometimes the homœopathic layman and oft-times the homœopathic physician, totally adverse to surgery, to disinfectants and other applications to douching, to laxatives, purgatives and sedatives, in fact to any outside aid is not purely therapeutic. May we say that these objections are largely traditional, and the sooner they cease to be perpetuated *as such* the better for our reputation as healers of the sick, for healers we are first and homœopaths second.

CHANGES IN ONE HUNDRED YEARS.

Passing over the details of the changes that have taken place in science and medicine during the hundred years, let us consider what is the state of matters at the present day.

First as the Conditions of the Present Practice of Homœopathy.—

The rule of cure remains immutable in all its variety of application, there is no change there. The traditions which, already referred to, have grown up around it have become in the practice of some almost as unchangeable as itself, permeating the mind of patient and physician alike. They are, shortly, aversion to surgery, disinfectants, external applications (except a very few), exclusion of serum and vaccine diagnosis and therapeutics, distrust of specialists, except the specialist in pure homœopathy, and exclusion of pathology, in fact a general distrust and exclusion of anything of the practical developments and discoveries in medicine of the last hundred years. In fact therapeutics is the *be all* and *end all* of treatment. This of course may appear to you to be an extreme statement of the whole case. Fortunately it is only a part view, but I state it here to indicate the tendency often found in the mind of patient as well as physician.

On the other hand, what has the old school of medicine done during the century? You all know full well. The discovery of bacteria and parasites and of the part that certain of them play in the causation of disease, has revolutionized the whole outlook of medical science and in particular the prevention and treatment of infectious disease.

If we go back only a quarter of a century, there were not as many diseases as the fingers of the hands attributed to bacteria or invisible parasites. To-day it is all the other way; the diseases not attributable to bacteria, &c., excluding those due to poisoning, not bacterial, and those due to dietetic errors, are almost less than the total of our fingers. Of many diseases it is true we have not found the bacterium, but we know very surely by inference that it must be there. Take small-pox, for instance: there is every ground for believing that some pathogenic organism too small to be stopped by ordinary filters or seen by our present microscope is present. Time and research will ultimately discover it.

Now it is just in the matter of bacterial disease that a wonderful extension of the homœopathic rule has come about. Diseases such as tuberculosis are being treated with such success by their own bacterial toxins (or special poisons) as to lead us to hope that some day with improved methods sure and certain cures can be effected in all but those cases which are already beyond recall before coming under treatment. This particular subject of tuberculosis will be fully laid before you at a later stage this morning.

There are many other diseases curable either by vaccine or serum. The therapeutic material used in these cases consists of the *idem* or *the same thing*, viz., the toxin or cause of the disease itself instead of the homœopathic simillimum. The former is identical with the cause; it may be called the disease; the latter is the thing which is most like to that which causes the symptoms. Here we touch a controversial point. The question arises; "When does the *idem*, let us say the tuberculin from the bacilli of a consumptive patient, *cease to be the idem* by reason of culture and preparation processes, and when does it become a simillimum instead; does it cease to be the *idem* as a result of these processes?" Hahnemann, to judge by the references in the "Organon," did not deny virtue to the *idem* in effecting a cure, but Hahnemann had not lived to know the science of bacteriology, and I doubt not that were he living to-day he would agree with the eminent bacteriologist Von Behring, that the treatment of disease by toxins of bacteria is nothing more or less than the application of the homœopathic rule.

On this point I would submit finally that where a bacterial toxin, in form of a vaccine, has been employed and found useful over a large number of cases, the homœopathic physician should not brush it lightly on one side as being outside his sphere, but test it and adopt it as being in accordance with his guiding rule in therapeutics.

SERUMS.

As for serums I have already had occasions to discuss them and their relation to homœopathy at the Bristol and Oxford Congresses, so will not trespass further on your forbearance than to say that the use of serum is a short cut to the use of the toxin in the treatment of its appropriate disease. In the manufacture of a serum from a toxin certain processes are conducted outside the human body and the healing material employed *as it were* ready made. The serum is not the homologue of the simillimum. Of the value of serum in diphtheria there is not the least shadow of doubt, a lessened mortality of 15 to 20 per cent. is sufficient proof of that, only its manufacture entails the employment of animals in the intricate process of preparation and *there* the strict homœopath finds the double difficulty: the use of something, as he thinks, outside homœopathy, and the introduction of the practice of what is called "vivisection." But here we find ourselves nearing the quicksands of bitter controversy, so the sooner we steer another course the better for harmony.

Even though we have the testimony of good homœopathic colleagues, *some* with us, *some* gone, who have in a long experience found that they have never lost a case of diphtheria when treated homœopathically, yet there are others who hold that it is the physicians's stern duty to offer the patient or friends the advantages of prompt serum treatment. Even when refusal is met, the physician will have the satisfaction of knowing that he has done his duty and his best.

We look forward to the day when traditional objections to this as well as vaccination and aseptics will have died out with those who still hold them.

THE ATTITUDE OF HOMŒOPATHY TO SURGERY.

Reference has already been made to the traditional objections, both lay and professional, to surgical interference. It is a subject which is worth a little more consideration in detail, for it has to be dealt with every day in practice and often involves very serious issues. Perhaps it would be better to give one or two concrete illustrations, and, in deference to a section of my audience, I shall endeavour to state the cases more in general than in particular.

Case I.—A woman presents herself in the out-patient clinic of the hospital with a history of pain and a lump in the breast of a year's duration. She has been *under homœopathic treatment* all this time. Meanwhile, the lump, of the size of a bean when discovered, has now advanced to the size of an orange, with extensive glandular involvement. She wishes to have it operated on.

Obviously it is long past the stage when surgical interference will be of the slightest avail, even if the most extensive modern operation were adopted, for already secondary growth must be present or imminent elsewhere in the body. These are sad cases, for one feels that valuable time has been lost. Had she come when first the lump or pain was felt, before involvement of the nearest lymphatic vessels, surgery would have offered a good chance of a certain and complete cure, for one in three or four of such cases is really cured by the modern surgery. The earlier the case is taken in hand, the more complete and searching the operation, the greater the chance of cure.

Why did not the patient come earlier? It was on account of the traditional objection, both lay and professional, and very prevalent among homœopaths, to operation.

Case II.—A woman who has for a few weeks felt a pain in the breast, comes to the out-patient department of a homœopathic hospital. On examination, there is a small hard nodule, the size of a bean, with just a faint dimpling of the skin, hard, nodulated but movable. Though a fairly early case, yet undoubtedly malignant. She wishes homœopathic medicinal treatment. She is averse to operation. In fact, she has come because she has heard that homœopathy can cure her malignant tumour.

What is the surgeon to do? Is he to treat her for two or three months medicinally without result, and when the mass has obviously grown and extended, tell her that she should submit to operation? Having come to know and trust him she probably takes his advice, but she would not have done so at the first interview. Now this is not a rare case, it happens every day. The patient's chances of cure from operation have faded rapidly as the two or three months of therapeutic treatment have passed by, till nothing but a bare chance remains. Was the surgeon justified in allowing the delay without protest? No doubt he was induced to delay on account of the *traditional objection* by the patient to operation. Should this kind of objection continue to have influence?

In all branches of surgery and gynæcology, similar situations are constantly occurring. Life and bodily comfort, well-being and fitness for work, are being sacrificed too often on account of sentimental objection.

No doubt when the objection took its rise, in Hahnemann's day, when surgery was obviously unsatisfactory, the objection was reasonable. But anæsthetics and asepsis have changed all that. The risk to life in an ordinary operation is now infinitesimal, the pain and discomfort afterwards are almost negligible and the net result is eminently satisfactory. Then why should the traditional objection still obtain? It hampers the medical adviser and stands in the way of the patient's comfort and health. Certainly no one wants to be made to suffer pain, particularly if unnecessarily. Humanity dreads pain, but sometimes one is struck by the resignation of patients before operations, even before oft-repeated operations, but let it not be said that the homœopathic physician counsels delay or postponement where the operation is obviously urgent and necessary.

There is a time for *medicine* and a time for *surgery*. The difficulty is to determine what the particular occasion necessitates. Let us judge carefully and honestly, putting on one side sentimental and traditional objections.

EMERGENCY CASES.

Relief of Pain.—The general practitioner has frequently to deal with the symptom of severe pain. Now the public does not want to be kept indefinitely in pain whilst two or three homœopathic remedies are being tried in search of the right one. The patient knows that instant relief can be got in most cases from a dose of morphia or aspirin or other suitable sedative, but as a professed homœopathist he resists the temptation willingly. In other cases on the advice of the physician it is withheld, as harmful and prejudicial to a satisfactory recovery, and so the patient may endure on medical advice hours or days of what seems unnecessary pain. Now we know that pain and sleeplessness sap the physiological strength; are we justified in withholding a suitable sedative on a suitable occasion? There is always the risk in cases of continued suffering of the drug habit being acquired, but I speak now more particularly of those cases of emergency which occur in every-day practice, such as biliary and renal calculi, severe intestinal spasm, the acute and wearing pain of some forms of herpes and similar conditions familiar to you all. Though the appropriate homœopathic remedy will suffice for most cases still there are in my experience some which require a quicker and more active sedative. What is the homœopathic practitioner to do in these cases?

The times have changed since Hahnemann lived; many are the helpful forms of sedatives due to recent synthetic chemistry. Is the practitioner to confess to his patient and to the world in general that his therapeutic law and equipment cannot always allay acute pain or secure a comfortable night's rest? Obviously the fault may be his own as a therapist. Granted that this is so, or that the pain is too acute to have speedy relief from a drug used homœopathically, what is his line of action to be? I think you will allow that in such cases he would be justified if not compelled to give with caution as to dose and repetition an appropriate sedative, the real disease or cause of pain to be dealt with therapeutically when the acute crisis is lessened or has subsided.

PHYSIOLOGY, PATHOLOGY, CLINICAL METHODS.

Most of us know by personal experience that the homœopathic practitioner must ever be a student, and his studies must cover a wider field than in the case of his allopathic colleague, for in addition to keeping himself well up-to-date in the rapid advance of ordinary medical science, he is expected to give and must give special attention to his own particular cult. We know the many hours at

midnight and early morn that many of us have spent and will spend in searching diligently for the simillimum and in working out our difficult cases. To some this task is easy because congenial, to others it is a real task because not exactly in their line, yet duty demands it. It may well be said that therapeutists are born, not made—much may be done by trying to make them, but not all. Aptness and facility in this work is more hereditary than acquired.

And yet in addition to this almost daily duty, time must be found for improvement in general medical knowledge.

Let us take, for example, the case of a practitioner who has been at work for fifteen or twenty years. No doubt by the way he has accumulated a useful stock of worldly wisdom—I mean in a good sense—but if he depends on that and his homœopathic literature alone he will find that to-day he is quite out of the running. He will find that the young man just off the schools “will wipe his eye,” to speak colloquially in points of physiology, pathology, bacteriology and clinical methods which all lead to accurate diagnosis. In these departments enormous strides have been made during the last twenty years and are still being made, and it is absolutely essential that the general practitioner must make it a point to keep abreast of the times. And here I would like to say personally how much I have been indebted to the yearly volumes of that excellent publication, *The Medical Annual*, in the conduct of which in the past, and I presume in the present one of our colleagues who is with us to-day has been largely active.

It is not given to all my colleagues whom I see before me to have the advantage of living near a good hospital or educational centre where they may occasionally rub shoulders with their more favoured colleagues and refresh themselves at the fountains of knowledge, nor are they always able to attend medical societies regularly for various good reasons in the case of homœopaths, yet in their every day work, when they are ploughing more or less a lonely furrow, it is all the more necessary that they should be generally efficient in general medical knowledge. There are only twenty-four hours in the day—even Mr. Willett admits that. After a full day's work, after due allowance for eating, sleeping, relaxation and social duties, what time is left for improvement in general medical knowledge? Yet my point is that necessity requires it.

We know there is an idea abroad among us that pathology, bacteriology, &c., and kindred new subjects are of slight or no assistance in the finding of the simillimum and in the therapeutic

treatment of the sick and therefore need not be troubled about. It would be interesting to trace the origin of this idea. I do not think it would have originated with the founder of homœopathy, for no one was a keener student of all that pertained to the ground work of the knowledge of disease than he. The light was only glimmering then and for long afterwards. His followers became absorbed more and more in the materia medica and the repertory, to the exclusion of all else, and I feel certain that those men deluded themselves, threw dust in their own eyes when they derided pathology, derided, as I have heard them, the facts of bacteriology and the principles of asepsis. But their words remained in the memory of the younger men, and if a man has grown up with this idea and acted upon it, it is easier for him to stick to his position than acknowledge when too late that he has made a mistake in his policy.

DIAGNOSIS AND TOTALITY OF SYMPTOMS.

The old and only teaching of homœopathy was to depend on the totality of symptoms in searching for the remedy. This has inevitably led to slackness in diagnosis—a habit to be deplored, for as a rule nothing is so essential to the reputation or success of a physician, and incidentally to the benefit of his patient, as careful and accurate diagnosis as a foundation for treatment. The patient expects it. The day is past when he can be put off with some general term such as gout, rheumatism, neuralgia or disordered blood. How often have these terms been used as diagnostic scapecoats with subsequent loss of reputation to the goatherd! How often do we find that these terms can be resolved in terms of infection, obvious or hidden, and of general or local toxæmia!

Here is an example: A young man, aged 25, who has suffered several years from a chronic fœtid nasal discharge, facial neuralgia, and indifferent health, has been treated in the strictest homœopathic method by drugs—low and high and very high—where the simillimum has been most carefully sought for and applied, and yet without result. Overcoming his traditional scruples about surgical interference, douches, &c., he consults a competent nose specialist, who finds his maxillary antrum full of pus in a fœtid condition, teeming with bacteria. The proper surgical treatment is carried out, the antrum drained and douched, and, lo! in a few weeks all is absolutely well locally and generally.

Such a case illustrates the harm that results from being swayed by ancient tradition and unreasoning objection to adopt any treatment

that is not pure homœopathy. The lessons for us are that we should be even more careful in our diagnosis than those of the other school, and when face with what is really a physical condition, that we must adopt, in addition to our therapeutics, physical means of treatment—in this case it was drainage.

Many of us remember, with altered feelings now, the voice of one who "cried in the wilderness" at our society meetings and consultations some twelve or fifteen years ago, that of Dr. Edward Blake. Many of us then were uncharitable enough to suggest that he was obsessed with the idea of toxins in every disease, yet how true to-day is every word that fell from him on our unreceptive ears. He was a prophet and lived a decade before his time. Even in the light of the advances of to-day in applied bacteriology, there still are some who are apt to cavil at the toxic origin of disease.

Doubtless treatment on these lines has failures as well as successes, but we must wait patiently for further research and fuller experiences before venturing to condemn it in part or *in toto*.

But to return to the subject of diagnosis, it cannot be emphasized too forcibly that this is most important; that all clinical methods which help it must be practised and fully taken advantage of. True the time is too short for one man to make himself fully efficient in all new methods, so we gladly welcome the help offered us by the pathologist and bacteriologist who is transferring his attention more and more from the *post-mortem* room and the museum to the bedside of the patient in co-operation with the physician. We must not leave it to the pathologist to correct our diagnosis in the *post-mortem* room and greet him distantly as a foe rather than a friend. His place is as a colleague and as special adviser in the sick room to the homœopath as well as to the allopath.

THE SPECIALIST IN HOMŒOPATHY.

I have already referred to the class of homœopathic physician who is a homœopathic pursit or specialist. He is not distracted in thought or treatment by external applications, surgery, or extra therapeutic measures. His advice as a specialist in chronic disease is sought as a rule when other measures have failed, where the cause has been diligently sought for and, if possible, removed, where the nature of the disease has eluded the microscope, the knife and the test-tube, but where the patient still suffers from a malady obvious or hidden from which he cannot get free. That is the principal sphere of the homœopathic pursit. It is his to know his *materia medica* and how to use his repertory. If he makes himself thoroughly

at home in this department and acknowledges that others must be allowed to do what they can in removing causes, or using accessory measures, then we still welcome his special knowledge of homœopathy and allow that he has a great and responsible work before him—that of using drugs on the pure lines laid down by Hahnemann.

CONCLUSION.

In this brief review¹ of the past and present in the practice of homœopathy, I hope I have been able to make it clear that the evolution in scientific medicine during the past one hundred years does and must exert an influence on our particular practice of homœopathy.

Further, it is evident that the influence of modern medicine is most felt by the general practitioner in homœopathy who has to deal with all kinds of cases, acute and chronic, from day to day, and finally, I would urge it to be his duty as far as possible to study all and cull the best of modern medical science, to harmonize it with and add it to his special therapeutic methods for the good of his patient and the honour of his profession.

Let us all, whatever our several views may be on potency or pathology, work together harmoniously for the common good, and the result will doubtless be to the benefit and reputation of our particular cult.—*The British Homœopathic Journal*, August, 1914.

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